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PREFACE.

THE importance of geography as a ſcience, and the exuberant variety of knowledge and amuſement which it exhibits, are themes too trivial for argument or illuſtration. Eagerly attached to this ſtudy from his early years, the author always cheriſhed a hope that he might contribute his labours to its advancement. For much remained to be done; and many literary men have long admitted, that great advantages might be derived from a new and improved ſyſtem of modern geography, the lateſt popular works of this nature not only abounding with numerous and groſs miſtakes, but being ſo imperfect in their original plans, that the chief geographical topics have been ſacrificed to long details of hiſtory, chronology, and commercial regulations, wholly extraneous to the very nature of ſuch a deſign. When to this it is added, that the moſt recent and important diſcoveries are either omitted, imperfectly illuſtrated, or ſo defectively arranged as to embarraſs and baffle the reſearch of the moſt patient inquirer, there is no reaſon to be ſurpriſed at the general confeſſion, that ſuch compilations are only uſed becauſe there is no better extant.

The ſucceſſive diſcoveries in the Pacific Ocean, and other parts of the globe, have, within theſe few years, acquired ſuch a certainty and conſiſtency, that they may now be admitted and arranged, in a regular

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and preciſe diſtribution of the parts of the habitable world; while the recent diſcoveries of La Perouſe, Vancouver, and other navigators, nearly complete the exact delineation of the continental ſhores. No period of time could be more favourable to the appearance of a new ſyſtem of geography, than the beginning of a new century, after the elapſe of the eighteenth, which will be memorable in all ages, from the gigantic progreſs of every ſcience, and in particular of geographical information; nor leſs from the ſurpriſing changes which have taken place in moſt countries of Europe, and which of themſelves render a new deſcription indiſpenſable. Whole kingdoms have been annihilated; grand provinces transferred: and ſuch a general alteration has taken place in ſtates and boundaries, that a geographical work publiſhed five years ago may be pronounced to be already antiquated.

After a general war of the moſt eventful deſcription, after revolutions of the moſt aſtoniſhing nature, Europe at length repoſes in univerſal peace. The new diviſions and boundaries no longer fluctuate with every campaign, but are eſtabliſhed by ſolemn treaties, which promiſe to be durable, as at no former period has war appeared more ſanguinary or deſtructive, and at the ſame time more fruitleſs even to the victors. Theſe treaties not only influence the deſcriptions of European countries, but of many in Aſia, Africa, and America.

A new ſyſtem of geography is alſo ſpecially authorized and authenticated, by the ſingular advantage of ſeveral important books of travels having appeared within theſe few years, which introduce far more light and preciſion into our knowledge of many regions. The embaſſies to China, Tibet, and Ava, for example, preſent freſh and authentic materials, without which recourſe muſt have been had to more remote and doubtful information; and the Birman empire is unknown to all ſyſtems of geography. The Reſearches of the Aſiatic Society, and other

other late works, diffuſe a new radiance over Hindoſtan, and the adjacent countries. The labours of the African Society, the travels of Park, Browne, and Barrow, have given more preciſion to our imperfect knowledge of Africa: and the journies of Hearne and Mackenzie have contributed to diſcloſe the northern boundaries of America. In ſhort, it may be ſafely affirmed, that more important books of travels and other ſources of geographical information, have appeared within theſe few years, than at any period whatever of literary hiſtory.

In this work the eſſence of innumerable books of travels and voyages will be found to be extracted; and ſuch productions have been the favourite amuſements of the moſt diſtinguiſhed minds, in all periods and countries, as combining the variety, novelty, and adventure, of poetical and romantic narration, with the ſtudy of man, and the benefits of practical inſtruction. It is unneceſſary to repeat the names of Montaigne, Locke, Monteſquieu, &c. or that of my late friend Gibbon, whoſe collection of voyages and travels formed the moſt choſen part of his library. Why did he not write geography! Why has a Strabo been denied to modern times!

Nor muſt the rapid advances of natural hiſtory be forgotten, which now confer ſuch ſuperior preciſion on the natural geography of moſt countries. Not only have zoology and botany received the greateſt improvements; but geology and mineralogy have, within theſe twenty years, become entirely new and grand ſciences; the ſubſtances being accurately arranged, and deſcribed with ſuch clearneſs, that throughout the literary world they are exactly known and diſcriminated.*

* The preſent ſyſtem of mineralogy was firſt eſtabliſhed by Bergmann, in 1782; who was followed by Werner, 1789. Mr. Kirwan publiſhed an excellent work, 1794, two volumes, 8vo. and in general, within theſe ten years, this important ſtudy, ſo eſſential to national wealth and proſperity, has on the new principles been cultivated with ſurpriſing ardour and ſucceſs.

Yet

Yet even with ſuch advantages geography is far from being perfect; and the familiar exclamation of D'Anville in his old age may ſtill be adopted: "Ah! my friends, there are many errors in geography." * This ſcience may indeed be regarded as imperfect in its very nature, as no reaſonable hope can be entertained that all the habitable lands ſhall, at any period of time, paſs under a trigonometrical ſurvey, the only ſtandard of complete exactneſs. The chief defects are the interior parts of Africa, and many portions even of the ſhores; Tibet, and ſome other central regions of Aſia, nay even Perſia, Arabia, and Aſiatic Turkey; the weſtern parts of North America; and the Spaniſh ſettlements in that part of the new continent; with the central and ſouthern parts of South America. Of New Holland little is known, except the ſhores: and many diſcoveries remain to be made in the Pacific Ocean, particularly the extent and interior part of New Guinea, and other large lands in that quarter. Even in Europe the geography of Spain and Portugal is very imperfect, though not ſo defective as that of European Turkey; nor can we loudly boaſt while, as Major Rennell informs us, there is no exact chart of the Britiſh Channel; and the trigonometrical ſurvey, ſo far as it has extended, has detected groſs errors in the maps of the counties.† We have indeed been generally more attentive to remote regions, than to our native country; and could a new ſyſtem have been publiſhed with more advantages, than in the kingdom which has given birth to the greateſt modern diſcoveries, and improvements in geography?

* "*Ah! mes amis, il y a bien des erreurs dans la geographie.*"

† It is a lamentable circumſtance that geography is at times retrogreſſive in ſome points, while it advances in others. Thus Preſton's ſurvey of the Shetland Iſlands repreſents them as one third part too large, both in length and breadth, and there are groſs errors in the poſitions. The miſtake was detected in the important voyages ordered by the late king of France; and remedied in the Daniſh map, Copenhagen, 1787, but ſtill more in that of Capt. Donnelly. Theſe iſles now appear nearly as in the maps preceding 1750. Preſton's map of theſe remote Britiſh poſſeſſions has even occaſioned ſhipwrecks: and the ſcience and capacity neceſſary for ſuch a ſurvey ought to be the object of ſtrict previous inveſtigation. Many ſuch inſtances might be given.

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The rapid progreſs of ſcience has alſo, within a like ſhort period, greatly improved the maps and charts of moſt countries, always to be ranked among the chief objects of geography; though unaccountably the compilers of modern ſyſtems ſeem to write without the inſpection of any map whatever, or at leaſt never make any reference of that nature. This is the more ſurpriſing, as accurate maps and charts may be ſaid to form the very foundation of geographical knowledge. The author of the preſent work has been ſedulous to diſcover the lateſt and beſt maps of all countries, in which reſearch he has been liberally aſſiſted by our beſt practical geographers. The ſmall maps which accompany the work are drawn with great care, under the directions and reviſion of Mr. Arrowſmith, who is well known by the induſtry and attention which he employs in ſelecting the moſt recent and accurate materials and improvements. The ſmallneſs of the ſize will of courſe prevent them from ſupplying the place of a large and complete atlas; but they will be found to conſtitute an uſeful introduction to ſuch a collection, as they are reduced from the beſt large maps, and the authorities added at the bottom, while they are illuſtrated with many important features of the countries, and intereſting names, derived from works of natural and civil hiſtory, for which a large and expenſive atlas may be conſulted in vain.* The latter had beſt be formed by the

* A moſt ingenious artiſt, conſiderably imbued with mathematical knowledge, having invented machines which give more clearneſs and preciſion to the engraving of ſtraight lines, the author, who had hitherto only ſeen this method employed in the repreſentation of mathemat cal inſtruments, and machinery, was impreſſed with its peculiar fitneſs for the delineation of water. With this idea he applied to Mr. Lowry, the inventor, and the effect is now before the public in a ſeries of maps, which may ſafely be pronounced to be not only unrivalled, but unexampled by any former efforts in this department. Not to mention ſuperior richneſs and neatneſs, it is not only ſingularly adapted to the inſtruction of youth, by the inſtantaneous repreſentation of the form and chief bearings of each country, but alſo facilitates conſultation by the marked diſtinction between land and water, which enables the eye to paſs more quickly to the other objects. The conſultation of charts might be facilitated in a ſimilar manner, while, in the uſual contraſt between maps and charts, the ſea might be preſerved white, and the lands diſtinguiſhed by ſtrokes, not horizontal, which would reſemble water, but vertical. In mineralogical maps the heraldic mode of engraving might be adopted.

reader

reader himſelf, for which purpoſe a liſt of the beſt maps is given at the end of the ſecond volume, affording materials for a ſelection of the great, of the middle, or of the ſmall kind. To the firſt claſs, for example, may be aſſigned Caſſini's map of France in one hundred and eighty-three ſheets, Ferrari's map of the Netherlands, and others of a ſimilar extent, more appropriated to public libraries and princely collections. To the ſecond claſs may be referred maps of kingdoms, from eight or ſix to four ſheets; while an atlas of the ſmalleſt ſize may include thoſe from four to one ſheet large folio; under which a collected atlas can be of no utility. Yet even of the latter a wonderful defect may be obſerved in the beſt private libraries, where, though a good atlas ſhould form the firſt object of enquiry and expence, as being uſeful in reading almoſt every deſcription of books, yet maps of the moſt antiquated and erroneous kind often appear; and even the literary inveſtigator is ſatisfied with finding the name without exploring the fidelity of the general outline, or the accuracy of the poſitions.

With the advantages above enumerated, of new and important diſcoveries, of recent and authentic intelligence, and of the particular period of publication, there cannot be any great claim of merit in preſenting a more complete ſyſtem of geography, than has yet appeared in any language; for the Spaniards and Italians have been dormant in this ſcience, the French works of La Croix and others are too brief, while the German compilations of Buſching, Fabri, Ebeling, &c. &c. are of a moſt tremendous prolixity, arranged in the moſt taſteleſs manner, and exceeding in dry names, and trifling details, even the minuteneſs of our Gazetteers*. A deſcription of Europe in fourteen quarto

* The geographical ephemeris of Zach, (*Allgemeine Geographiſche Ephemeriden,*) a monthly journal in the German language, embraced aſtronomy and geography, and has contributed to the advancement of both ſciences. It is now conducted by Gaſpari and Bertuch, and more ſtrictly confined to geography; while Zach's new journal (*Monatliche Correſpondenz*) relates chiefly to aſtronomy.

volumes may well be contraſted with Strabo's deſcription of the world in one volume: and geography ſeems to be that branch of ſcience in which the ancients have eſtabliſhed a more claſſical reputation than the moderns. Every great literary monument may be ſaid to be erected by compilation, from the time of Herodotus to that of Gibbon, and from the age of Homer to that of Shakſpere; but in the uſe of the materials there is a wide difference between Strabo, Arrian, Ptolemy, Pauſanias, Mela, Pliny, and other celebrated ancient names, and modern general geographers; all of whom, except d'Anville, ſeem under-graduates in literature, without the diſtinguiſhed talents, or reputation, which have accompanied almoſt every other literary exertion. Yet it may ſafely be affirmed that a production of real value in univerſal geography requires a wider extent of various knowledge than any other literary department, as embracing topics of the moſt multifarious deſcription. There is however one name, that of d'Anville, peculiarly and juſtly eminent in this ſcience; but his reputation is chiefly derived from his maps, and from his illuſtrations of various parts of ancient geography. In ſpecial departments Goſſellin, and other foreigners, have alſo been recently diſtinguiſhed; nor is it neceſſary to remind the reader of the great merit of Rennell and Vincent in our own country.

With ſuch examples the author confeſſes his ambitious deſire that the preſent work may, at leaſt, be regarded as more free from defects than any preceding ſyſtem of modern geography. By the liberality of the publiſhers no expence has been ſpared in collecting materials from all quarters; and the aſſemblage of books and maps would amount to an expence hardly credible. If there be any failure, the blame muſt ſolely reſt with the author; who being however converſant with the ſubject, from his early youth, when he was accuſtomed to draw maps, while engaged in the ſtudy of hiſtory, and never having neglected his devotion to this important ſcience, he hopes that the ample materials

will be found not to have been entruſted to inadequate hands. He may affirm that the moſt ſedulous attention has been exerted, in the ſelection and arrangement of the moſt intereſting topics; and he hopes that the novelty of the plan will not only be recommended by greater eaſe and expedition, in uſing this work as a book of reference; but by a more ſtrict and claſſical connection, ſo as to afford more clear and ſatisfactory information on a general peruſal. The nature and cauſes of the plan ſhall be explained in the preliminary obſervations, as being intimately connected with other topics there inveſtigated. It may here ſuffice to obſerve, that the objects moſt eſſentially allied with each other, inſtead of being diſperſed as fragments, are here gathered into diſtinct heads or chapters, arranged in uniform progreſs, except where particular circumſtances commanded a deviation: and inſtead of pretended hiſtories, and prolix commercial documents, the chief attention is devoted to ſubjects ſtrictly geographical, but which in preceding ſyſtems have often appeared in the form of a mere liſt of names, the evaneſcent ſhades of knowledge. Meagre details of hiſtory can be of no ſervice even to youth, and are foreign to the name and nature of geography, which, like chronology, only aſpires to illuſtrate hiſtory; and, without encroaching upon other provinces, has more than ſufficient difficulties to encounter. The States are arranged according to their comparative importance, as it is proper that the objects which deſerve moſt attention ſhould be treated at the greateſt length, and claim the earlieſt obſervation of the ſtudent.

In the Introduction Profeſſor Vince ſeems to have omitted nothing in aſtronomy, or meteorology, that could in the leaſt illuſtrate geography; and has carefully availed himſelf of the lateſt inventions and diſcoveries. For the botany of the ſeveral countries this work is indebted to Mr. Arthur Aikin, a zealous and intelligent cultivator of natural hiſtory. It may be neceſſary to remind the unlearned reader, that the Latin names

in this part are unavoidable, becauſe plants not known in England muſt rarely admit of Engliſh appellations.

This work will, it is hoped, ſhew the progreſs of geography, in every part of the world, to the beginning of the nineteenth century; and when compared with any ſyſtem, publiſhed at the beginning, or even in the middle, of the eighteenth, the advances will be found to be prodigious. Many of the early ſyſtems were not a little injured in truth and perſpicuity, by the mixture of ancient and modern names, even in the maps; an abſurdity lately attempted to be revived by ſome French authors: while in this ſtudy the modern ſtate ought always to claim the precedence, becauſe the genuine form of the countries, the windings of the ſhores, the courſe of the rivers, the direction of the mountains, and all thoſe parts in which natural geography receives aſſiſtance from natural hiſtory, are only aſcertained by recent obſervations; and upon this immutable baſis ancient geography muſt ultimately reſt. The modern delineations of many parts of Greece and Aſia Minor have thrown a light upon ancient hiſtory, which could never have been derived from theoretic geography, always uſeleſs, becauſe it cannot alter the face of nature; and often blameable, as by ſuppoſitions of knowledge, it impedes the progreſs of genuine obſervation, and patient diſcovery. In order to delineate the ancient ſtate of a country, it is indiſpenſable that the beſt modern maps be previouſly inveſtigated; by which proceſs alone can the ſites be accurately determined: and innumerable conjectures of Cluverius, Cellarius, and even d'Anville, have been overturned by the preciſion of recent knowledge. Yet the firſt elements of ancient geography are often inſtilled into the minds of youth from obſolete maps, in which the moſt important poſitions of natural geography, and ſometimes even the very points of the compaſs, are perverted; and from authors whoſe moſt radical opinions have been

overturned half a century ago! The proper progreſs is therefore to begin with the ſtudy of modern geography, which may afterwards be followed, with the greateſt advantage, by that of the ancient. The oppoſite courſe ſeems almoſt as ridiculous as it would be to commence the ſtudy of botany by the peruſal of Dioſcorides, and the Greek and Latin names of plants, without any acquaintance with their genuine characteriſtics and qualities. In general, genius may be cultivated by the ſtudy of ancient authors; but the grounds of any branch of ſcience are to be ſought in modern preciſion.

Amidſt other advantages already indicated, the regular references to the authorities, here obſerved for the firſt time in any geographical ſyſtem, will be admitted to be a conſiderable improvement, not only as imparting authenticity to the text, but as enabling the reader to recur to the beſt original works, when he is deſirous of more minute information *. Yet this improvement is ſo ſimple that the omiſſion might ſeem matter of ſurprize, were it not that former works of this nature will generally be found to be blindly copied from preceding ſyſtems, with the ſole claim of ſuperiority in error, as muſt happen in ſuch caſes, where miſtakes multiply, and an old hallucination becomes the father of a numerous progeny. The ſtrict quotation of authorities might alſo be rather dangerous in erroneous details; and the omiſſion is as convenient, as it is to paſs in ſilence geographical doubts of great importance, which might prove perilous ordeals of ſcience. Accuſtomed to the labours and pleaſures of learning merely for his own men-

* It is alſo to be wiſhed that writers on civil and natural hiſtory, &c. would, on the mention of places otherwiſe minute and obſcure, indicate the diſtance and the quarter of the compaſs from ſome well known city, or other object, the bare mention of a name being often inſufficient, even for conſultation of the largeſt atlas. This defect often conſumes much of the reader's time, which might be ſaved by the addition of two or three words, with an improvement of the ſenſe, and no injury to the melody of the expreſſion.

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tal improvement, as the delight of his eaſe, the relief of care, the ſolace of misfortune, the author never heſitates to avow his doubts, or his ignorance; nor ſcruples to ſacrifice the little vanity of the individual to his grand object, the advancement of ſcience. An emphatic Arabian proverb declares that *the errors of the learned are learned;* and even the miſtakes of a patient and unbiaſſed inquirer may often excite diſcuſſion, and a conſequent elucidation of the truth. Many blemiſhes will no doubt, be found in a work of ſuch an extenſive and multifarious nature; but thoſe who are chiefly enabled to detect them will be the firſt to pardon. The author can ſolemnly declare that, in the few cenſures which may be here found of ſome miſtakes in other works, he has in no inſtance been influenced by any motive, except the pure wiſh of preſenting exact information; ſuch a detection of preceding errors being indiſpenſable in a work of inſtruction. But ſuch paſſages will be found extremely rare, as he has generally left it to the reader to detect the miſtakes of his predeceſſors, many of which are groſs and radical even beyond conception, by a mere collation of their deſcriptions with thoſe contained in the preſent work. Should the public favour reward the author's endeavours, he will moſt ſedulouſly remove any blemiſhes, and adopt ſuch real improvements as may be ſuggeſted. In the ſtyle he has chiefly aimed at conciſe perſpicuity; and may have frequently ſacrificed elegance of ornament, or magnificence of period, to the ſevere accuracy of the topic. Even the eloquence of Pliny ſeems oppreſſed by the prolix minuteneſs of geography, and ſtruggles in vain, like a grand cataract, nearly arreſted by the froſt of an alpine winter. Nay the moſt decorated and conciſe of the ancient geographers is conſtrained to begin with an apology. "I attempt to deſcribe the ſtate of the world, a work "full of impediments and difficulties, and which can ſcarcely be enlivened "by one ray of elocution; for a great part will conſiſt of the names of

" nations and places, with ſome perplexity even in the order to be fol-
" lowed; and the materials are rather prolix than alluring. The ob-
" ject is nevertheleſs grand, and important; and aſpires to the utmoſt
" dignity of ſcience; being, even in unſkilful hands, capable of invit-
" ing attention, by the contemplation of its magnitude *."

* Pompon. Mela de Situ Orbis, Lib. i. init. Proœmii.

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INTRODUCTION.

1. GEOGRAPHY, as it relates to the figure and dimenſions of the earth, and the relative ſituations of places upon its ſurface, is founded upon the principles of ASTRONOMY; we ſhall therefore give a full and familiar explanation of ſuch parts of the latter ſcience, as may be neceſſary for underſtanding the former; together with ſuch other matters as may be conſidered a proper introduction to the work.

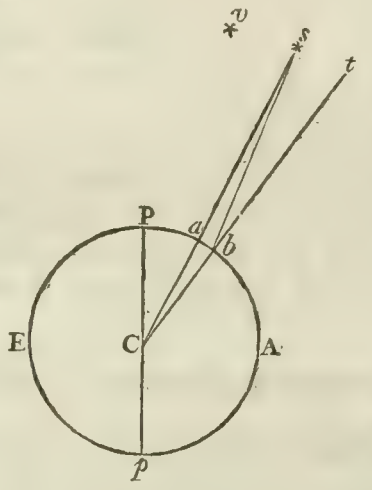
On the Figure and Dimenſions of the Earth.

2. The earth is a ſpherical body, and its figure is very nearly that of a perfect globe, not conſidering the little unevenneſſes of its ſurface ariſing from hills and valleys, as they bear no more proportion to its magnitude, than the ſmalleſt grain of ſand does to a common globe. The truth of this is manifeſt from the following circumſtances: 1ſt, When you ſtand upon the ſhore, the ſpherical form of the ſea is manifeſt to the eye. 2dly, When a ſhip leaves the ſhore, and goes out to ſea, you firſt loſe ſight of the hull, and then of the maſt, gradually from the bottom to the top: And when a ſhip approaches the ſhore, you firſt ſee the top of the maſt, and then the lower parts gradually appear, till at laſt you ſee the whole ſhip. Now theſe appearances would not take place, if the ſea were a plane; for then every part of the ſhip would diſappear together, after leaving the ſhore, and appear all at once when it approaches the ſhore; or rather, the hull would diſappear laſt, or appear firſt, that being the moſt conſpicuous part of the ſhip, which is contrary to matter of fact. But the appearances are exactly what they ought to be, upon ſuppoſition that the ſea is ſpherical, in which caſe the convexity of the water would produce the phænomena which are obſerved. 3dly, From the voyages of the navigators MAGELLAN, SIR FRANCIS DRAKE, LORD ANSON, COOK, and many others who have ſailed round the earth, having ſet off in one direction, and continuing their courſe, have come home in the oppoſite direction; that is, they have ſet off eaſt and come home weſt, or ſet off weſt and come home eaſt: this could not have happened if the earth had not been of a globular figure. 4thly, Another proof of the ſpherical form of the earth, ariſes from the form of the boundary of its ſhadow upon the moon in a lunar eclipſe, that boundary being always ſpherical, and nothing but a ſpherical body can, in all ſituations, produce a circular ſhadow. 5thly, If you travel towards the north, many new ſtars will appear above the horizon in the northern parts, and thoſe in the ſouthern parts near the horizon will diſappear. This can only ariſe from the ſpherical form of the earth. In ſhort, all the appearances both upon the earth and in the heavens, are juſt what they ought to be upon ſuppoſition that the earth is globular; but they will none of them anſwer to that of a plane ſurface.

3. The globular figure of the earth being thus eſtabliſhed, we proceed next to ſhow that the apparent diurnal rotation of all the heavenly bodies ariſes from the rotation of the earth about one of its diameters, called its *axis*. The apparent diurnal motion of all the heavenly bodies may ariſe from the rotation of the earth about its axis; or it may be accounted for by ſuppoſing the earth to be at reſt, and all the bodies daily to perform their revolutions about it. Now, if we ſuppoſe the earth to be at reſt, all the fixed ſtars muſt make a complete revolution every day in parallel circles. But aſtronomers have very ſatisfactorily proved, that the neareſt of the fixed ſtars is not leſs than 400,000 times further from us than the ſun is, and that the ſun's diſtance from us is not leſs than 93 millions of miles. Alſo, from the diſcoveries which are every day making by the vaſt improvement of teleſcopes, it appears that the heavens are filled with an almoſt infinite number of ſtars, whoſe diſtances are, probably, incomparably greater than what we have ſtated above. But that an almoſt infinite number of bodies, moſt of them inviſible except by the beſt teleſcopes, at almoſt infinite diſtances from us and from each other, ſhould have their motions ſo exactly adjuſted as to revolve in the ſame time, and in parallel circles, and all this without their having any central body, which (as SIR I. NEWTON has proved) is a phyſical impoſſibility, is an hypotheſis not to be admitted, when we conſider that all the phænomena may be ſolved ſimply by the rotation of the

earth about one of its diameters. If, therefore, we had no other evidence, we might reſt ſatisfied that the apparent diurnal motions of all the heavenly bodies are produced by the earth's rotation. But we have other reaſons for this ſuppoſition. Experiments prove that all the parts of the earth have a gravitation towards each other. Such a body therefore, the greater part of whoſe ſurface is a fluid, muſt, from the equal gravitation of its parts only, form itſelf into a ſphere. But it appears from menſuration, that the earth is not a perfect ſphere but a ſpheroid, having its equatorial longer than its polar diameter. Now if we ſuppoſe the earth to revolve, the parts moſt diſtant from its axis muſt, from their greater velocity, have a greater tendency to fly off from the axis, and therefore that diameter which is perpendicular to the axis muſt be increaſed. That this muſt be the conſequence appears from this experiment, that if you take a thin iron hoop, and make it revolve ſwiftly about one of its diameters, that diameter will be diminiſhed, and the diameter which is perpendicular to it will be increaſed. The figure of the earth therefore, which is that of a ſpheroid flattened a little at the poles, muſt have ariſen from its rotation. Another reaſon for the earth's rotation, is from analogy. The planets are opaque and ſpherical bodies, like to our earth; now all the planets, on which ſufficient obſervations have been made to determine the matter, are found to revolve about an axis, and the equatorial diameters of ſome of them are viſibly greater than the polar. When theſe reaſons, all upon different principles, are conſidered, they amount to a proof of the earth's rotation about its axis, which is as ſatisfactory to the mind as the moſt direct demonſtration could be. Theſe, however, are not all the proofs that might be offered; the ſituations and motions of the bodies in our ſyſtem, neceſſarily require this motion of the earth. It is no objection to the earth's rotation that we do not perceive it; for we know by experience, that when we are in the cabin of a ſhip on ſmooth water, if the ſhip turn round we do not perceive its motion, and all the fixed bodies on the ſhore appear to turn in a direction contrary to that of the ſhip. And in like manner, the earth turning about its axis from weſt to eaſt, all the heavenly bodies appear to move from eaſt to weſt. It has alſo been objected to the earth's rotation, that in ſuch a caſe, if a ball were thrown perpendicularly upwards, it ought to fall weſtward of the place from which it was projected. But it is to be obſerved, that when you project the ball upwards, it partakes of the earth's motion, and is carried on with it all the time it is riſing, ſo as to continue directly over the place from which it was projected. This may be exemplified by letting fall a ſtone from the top of the maſt of a ſhip in motion, for the ball falls as near to the foot of the maſt, as it would do if the ſhip were at reſt. Or when you are riding in a carriage, if a ball be let fall from the top, it meets the floor at the point which is directly under that from whence it fell.

4. The magnitude of the earth comes next to be conſidered; and as the figure of the earth is very nearly that of a perfect ſphere, we may, for our preſent purpoſe, conſider it as ſuch. And here we muſt premiſe, that if a ſphere be cut through by a plane, the ſection will be a *circle*: if the plane paſs through the center of the ſphere, the ſection is called a *great* circle; if it do not paſs through the center, it is called a *ſmall* circle. Alſo, that point of the heavens which is directly over the head of the ſpectator, is called his *Zenith*; and the oppoſite point, or that directly under his feet, is called his *Nadir*.



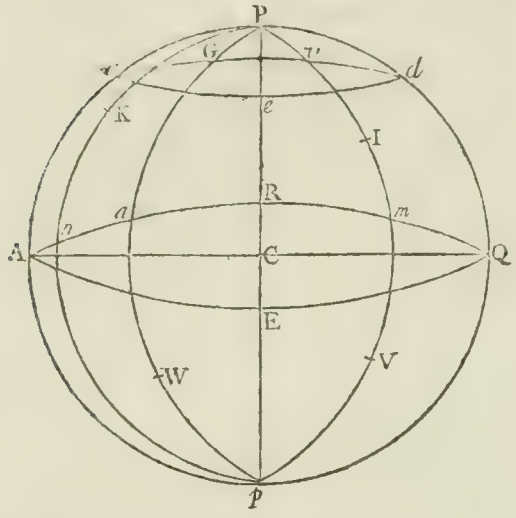
Let *PApE* repreſent the earth, *C* its center, *PCp* the axis about which it turns; then the extremities *P*, *p*, are called *Poles*; one, as *P*, the *north* pole, and the other, *p*, the *ſouth* pole; and all the great circles, as *PApE*, paſſing through the poles, are called *Meridians*. Now all circles are ſuppoſed to be divided into 360 equal parts, called *degrees*; every degree into 60 equal parts, called *minutes*; and every minute into 60 equal parts, called *ſeconds*; and degrees, minutes, and ſeconds, are denoted by theſe characters, °, ′, ″; thus 37°. 18′. 25″. means, 37 degrees, 18 minutes, 25 ſeconds. And the angles at the center of the circle correſponding to the arcs, are called angles of ſo many degrees, minutes, and ſeconds. From *C* draw the right line *Cas* to a ſtar at *s*; then the ſtar *s* is in the zenith of a ſpectator at *a*; take *ab* = 1°, and draw *Cbt* to the heavens at *t*, then *t* is the zenith to a ſpectator at *b*; alſo, the angle *aCb*, or *sCt*, is 1°; join *bs*; then becauſe the radius *Cb* of the earth bears no ſenſible proportion to the diſtance *Cs* of the fixed ſtars, the angle *sbt* will not ſenſibly differ from the angle *sCt*, or from 1°; therefore to a ſpectator at *b*, the ſtar *s* will be one degree from his zenith *t*. Let an obſerver therefore move from *a* to *b*, till he finds, from obſervation, that the ſtar *s* is 1° from his zenith, and then he knows that he has moved 1° upon the ſurface of the earth. Let the diſtance *ab* be meaſured, and then you get the length of an arc of 1°; and if you multiply that by 360, the pro-

duct will give you the circumference of the earth. An arc *ab* of any number of degrees may be taken, and then its length being measured, the length of 1 degree may be found by proportion. Or, instead of supposing the star to have been in the zenith of the spectator at *a*, we might have taken a star at *v*, and the difference between the zenith distances of the star *v* at the places *a* and *b*, would have been the same as that of the star *s*; so that when the observer had moved over an arc *ab* of 1°, the zenith distance of the star *v* would have altered 1°. In this manner the length of a degree of a great circle upon the earth's surface has been determined, and thence, its circumference. Possidonius, who lived in the time of Pompey the *great*, attempted thus to measure the circumference of the earth; he knew that the star called *Canopus* was in the horizon at *Rhodes*, and that at *Alexandria* its altitude on the meridian was $7\frac{1}{2}°$; and the distance between the two places (they being nearly in the same meridian) was 5000 *stadia*; whence he concluded the circumference of the earth to be 240,000 *stadia*. But as the exact value of the *stadia* is not now known, we cannot say how accurate this conclusion is. Our countryman Mr. Norwood, in the year 1635, was the first who determined the value of a degree to a considerable accuracy. He took the height of the pole star at *London* and at *York*; and by measuring their distance, he determined the length of a degree to be $69\frac{1}{2}$ miles and 14 poles. After that time, the French academy measured a degree. *Cassini* measured one in *France*; and afterwards *Clairaut*, *Maupertuis*, and several other eminent mathematicians, measured a degree in *Lapland*. The same measurements have been also frequently repeated in various parts of the earth, and the result of the whole is this, that the length of a degree, as you go from the equator to the poles, increases in length. Now the longer a degree is, the greater must be the circle of which it is a part; and the greater the circle is, the less is its curvature. It appears therefore from actual mensuration, that the earth is flatter, or of less curvature, at the poles, than at the equator, agreeable to what we before showed must necessarily be the consequence of the earth's rotation. The length of a degree in latitude 45° is 69,2 English miles, and this we may consider as a *mean* length; hence, 69,2 × 360 = 24912 miles, the circumference of the earth; and as the circumference of every circle is to its radius as 6,28318 to 1, we have, 6,28318 : 1 :: 24912 : 3965 miles, the radius of the earth. Dr. Long estimated the proportion of land to water upon the surface of the earth, so far as discoveries had then been made, in the following manner. He took the paper off a terrestrial globe, and then cut out the land from the sea, and weighed the two parts; by this means he found the proportion of the land to the sea as 124 : 349. The conclusion would be more accurate, if the land were cut from the sea *before* the paper was put upon the globe. After all the modern discoveries, this method would probably give the proportion of land to water, to a considerable degree of accuracy.

5. We have already observed, that the earth is not a perfect sphere but a spheroid, having the polar diameter shorter than the equatorial; and the ratio of these diameters has been determined by different methods. If the length of a degree at two places be found by mensuration, that *datum* is sufficient to find the ratio; but the ratio thus determined, by taking different measurements, differ considerably. Mr. Vince, in his *Complete System of Astronomy*, vol. ii. page 69, has determined the ratio from a great many comparisons; and it will be found that they differ considerably; but the *mean* of the whole gives the ratio of 177 : 178 for the proportion of the polar to the equatorial diameter of the earth. Sir I. Newton, from the principles of gravitation, makes the ratio 229 : 230; and some authors have deduced a mean ratio from mensuration, which agrees very nearly with this. The length of a pendulum vibrating seconds, increases as you carry it towards the poles; and this ought to take place in consequence of the spheroidical figure of the earth, as before determined, and affords another proof of that figure. And if the length of a pendulum vibrating seconds in two latitudes could be accurately ascertained, we might find the ratio of the diameters of the earth, the density of the earth being supposed uniform. But the ratios thus deduced from different observations, differ considerably; owing, probably, to the irregularity of the density of the interior parts of the earth. M. Clairaut observes, that the variations of the lengths of pendulums make the ratio of the diameters nearer that of equality than 229 : 230, indicating a greater density towards the center. It has been also proposed to find the ratio of the diameters of the earth, from solar eclipses, as the computation of the parallax of the moon, and consequently the times of the beginning and end of such eclipses, will vary, according as the ratio of the diameters of the earth vary. M. de la Lande from hence makes the difference of the diameters to be $\frac{1}{306}$ of the whole. From a consideration of all the circumstances, it is probable that the difference of the polar and equatorial diameters is less than that which is determined by Sir I. Newton. If we take the ratio of the diameters as determined by him, the equatorial diameter will be found to exceed the polar, by about 34 miles.

6. It appears by calculation, that when the eye of a spectator is 6 feet above the surface of the sea, he can see 3 miles; and at any other altitude of the eye, the distance at which you can see, varies as the square root of the altitude; if therefore *a* be the altitude of the eye in feet, and *d* the distance in miles, which you can see at that altitude, then $\sqrt{6} : \sqrt{a} :: 3 : d = \frac{3}{\sqrt{6}} \times \sqrt{a} = 1{,}2247 \times \sqrt{a}$; hence, we have this rule: *Multiply the square root of the height of the eye in feet, by* 1,2247, *and the product is the distance to which you can see in miles.* For example; if the height of the eye be 25 feet, then the square root of 25 is 5, and if you multiply 1,2247 by 5, the product is 6,1235 miles, the distance to which the eye can see.

On the Latitude and Longitude of Places upon the Earth's Surface.



7. Let *PApQ* repreſent the earth, *PCp* its axis, *P* the north pole, *p* the ſouth pole; and let *AEQR* be a circle paſſing through the center *C*, perpendicular to the axis *Pp*, then that circle is called the *equator*. This circle divides the earth into two equal parts, *APQ* called the *northern*, and *ApQ* called the *ſouthern hemiſphere*. Let *K*, *G*, *I*, be the ſituations of three places upon the ſurface, and through them draw the great circles *PKp*, *PGp*, *PIp*, called *meridians*, interſecting the equator in *n*, *a*, *m*, reſpectively. Now as every circle is ſuppoſed to be divided into 360 degrees, from the pole to the equator muſt be 90 degrees. The *latitude* of a place, is *an arc of its meridian intercepted between the place and the equator, meaſured in degrees*. Hence, the latitude of *K* is meaſured by the degrees of the arc *nK*; and the latitudes of *G* and *I* are meaſured by the degrees of the arcs aG, mI, reſpectively, and theſe are called *north* latitudes, the places lying in the northern hemiſphere; and the latitude of *W* is meaſured by the degrees of the arc *a W*, and is called *ſouth* latitude, the place lying in the ſouthern hemiſphere. Let the ſmall circle *cGvde* be parallel to the equator, then this circle is called a *parallel of latitude*, becauſe every point of it has the ſame latitude, all the arcs *mv*, *aG*, intercepted between it and the equator, being equal, on account of the circles being parallel. The *longitude* of a place is meaſured upon the equator, and is the arc intercepted between the point from which you begin to reckon, and the point where the meridian of the place cuts the equator, eſtimated in degrees. Hence, all places in the *ſame* meridian have the *ſame* longitude; the longitude of *G* is the ſame as the longitude of *W*. Geographers of different countries begin to reckon from different points, each beginning from that point where the meridian of its capital city cuts the equator; and if the city have a national obſervatory in or very near to it, that meridian is taken which paſſes through the obſervatory. This is called the *firſt* meridian. We may therefore define the *longitude* of a place to be *an arc of the equator intercepted between the firſt meridian and the meridian paſſing through the place*. In *England* therefore we begin from that meridian which paſſes through the obſervatory at *Greenwich*; in *France*, they begin from that meridian which paſſes through the obſervatory at *Paris*. Let therefore *G* repreſent the royal obſervatory at *Greenwich*, and *a* is the point of the equator from which we begin to reckon the longitude. Hence, the degrees of the arc *am* is the longitude of the place *I*; and the longitude of the place *K* is meaſured by the degrees of the arc *an*. Now the direction *am* from *a* is eaſt, and the direction *an* is weſt; it is therefore uſual to call *am eaſt* longitude, and *an weſt* longitude, each till you come to the point oppoſite to *a*, or till the longitude each way becomes 180 degrees. But ſometimes the longitude is reckoned all the way round in the ſame direction; that is, the point *m*, wherever it may be, is called eaſt longitude from *a*.

8. If the latitude and longitude of a place be given, the place itſelf may be found; for if the longitude be known, ſet off the arc *am* equal to it, if it be eaſt longitude, and draw the meridian *Pmp*; then if the latitude be north, ſet off *mI* equal to it, and *I* is the place required; but if the latitude be ſouth, ſet off *mV* equal to it, and V is the place. If the longitude be weſt, ſet off *an* equal to it, and take *aG*, or *aW* equal to the latitude, according as it is north or ſouth, and *G*, or *W*, will be the place. Thus, all the places upon the ſurface of the earth, whoſe latitudes and longitudes are known, may be laid down accurately upon a globe; and the boundaries of the different countries may be traced out, and each exhibited in its proper ſituation and figure. By means of a globe therefore you may get a perfect idea of the relative magnitudes, figures, and ſituations of all the countries of the earth, and of the ſituations of all the principal places in them; but a map, being a plane ſurface, cannot correctly repreſent their proportions, boundaries, and poſitions of the places. The determination of the latitude and longitude is therefore eſſential to geography, and conſequently to navigation; the methods by which theſe are found, we ſhall afterwards fully explain.

9. The arc *Gv* contains the ſame number of degrees as the arc *am*; the degrees of longitude therefore between any two places, when meaſured upon a ſmall circle parallel to the equator, diminiſh as that circle approaches the pole. The arc *am* contains the ſame number of degrees as the angle *aPm*; hence, the angle formed by the meridians paſſing through any two places, is the meaſure of the difference of the longitudes of thoſe places.

10. The following Table contains the length of a degree of longitude in Engliſh *miles* for every degree of latitude.

Lat.

Lat.	Deg. of Long.	Lat.	Deg. of Long.	Lat.	Deg. of Long.	Lat.	Deg. of Long.	Lat.	Deg. of Long.
0°	69,2000	18°	65,8134	36°	55,9842	54°	40,6751	72°	21,3842
1	69,1896	19	65,4300	37	55,2659	55	39,6917	73	20,2320
2	69,1578	20	65,0265	38	54,5303	56	38.6959	74	19,0743
3	69,1052	21	64,6037	39	53,7788	57	37,6891	75	17,9103
4	69,0312	22	64,1629	40	53,0100	58	36.6705	76	16,7409
5	68,9363	23	63,6986	41	52,2259	59	35,6408	77	15,5665
6	68,8208	24	63,2177	42	51,4253	60	34,6000	78	14,3874
7	68,6845	25	62,7167	43	50,6094	61	33,5489	79	13,2041
8	68,5267	26	62,1963	44	49,7783	62	32,4873	80	12,0166
9	68,3481	27	61,6579	45	48,9313	63	31,4161	81	10,8250
10	68,1489	28	61,1001	46	48,0705	64	30,3352	82	9,6306
11	67,9288	29	60,5237	47	47,1944	65	29,2453	83	8,4334
12	67,6880	30	59,9293	48	46,3038	66	28,1464	84	7,2335
13	67,4264	31	59,3162	49	45,3994	67	27,0385	85	6,0315
14	67,1448	32	58,6851	50	44,4811	68	25,9230	86	4,8274
15	66,8424	33	58,0360	51	43,5489	69	24,7992	87	3,6219
16	66,5192	34	57,3696	52	42,6037	70	23,6678	88	2,4151
17	66,1760	35	56,6852	53	41,6453	71	22,5294	89	1,2075

On the Atmoſphere of the Earth.

11. The earth is ſurrounded with a thin, inviſible, elaſtic fluid, called *air*, the whole body of which forms what is called the *atmoſphere*. It being an elaſtic fluid, is capable of compreſſion; on which account, the lower parts of the atmoſphere are denſer than the upper parts, and the denſity gradually diminiſhes, the higher you go, from the continual diminution of compreſſion; for the air being found to have weight, as you aſcend, the weight of the incumbent air will be diminiſhed. The denſity of the air is not always the ſame, it being ſubject to be expanded by heat and contracted by cold. In its mean ſtate it is found to be about 850 times lighter than water. But notwithſtanding the air is ſo extremely rare, it is capable of producing very conſiderable effects upon the rays of light as they paſs through it, both by reflection and refraction. By reflection, the rays coming from the ſun falling on the particles of air, and upon the vapours and exhalations contained in the atmoſphere, are thrown in all directions, and thus the whole heavens become illuminated; by which our eyes are affected ſo ſtrongly, as to render the fainter light of the ſtars inſenſible. Whereas, if there were no atmoſphere, we ſhould receive only thoſe rays which come directly to us, and the other parts of the heavens would appear dark, and the ſtars would all be viſible as at night. From the ſame cauſe we receive a conſiderable quantity of light for ſome time before the ſun riſes, and after he ſets; this is called *twilight*; and were it not for this, we ſhould be involved in total darkneſs, the inſtant after the ſun is ſet; and there would be a ſudden tranſition from darkneſs to light, at the riſing of the ſun, which would be extremely prejudicial to the eyes. From the time at which twilight begins and ends, the beginning and end are found to be when the ſun is about 18° below the horizon. It laſts however till the ſun is further below the horizon in the evening, than he is in the morning when it begins; it alſo laſts longer in ſummer than in winter. In the *former* caſe, the heat of the day has raiſed the vapours and exhalations; and in the *latter*, they will be more elevated from the heat of the ſeaſon; and therefore the twilight ought to be longer in the evening than in the morning; and longer in winter than in ſummer.

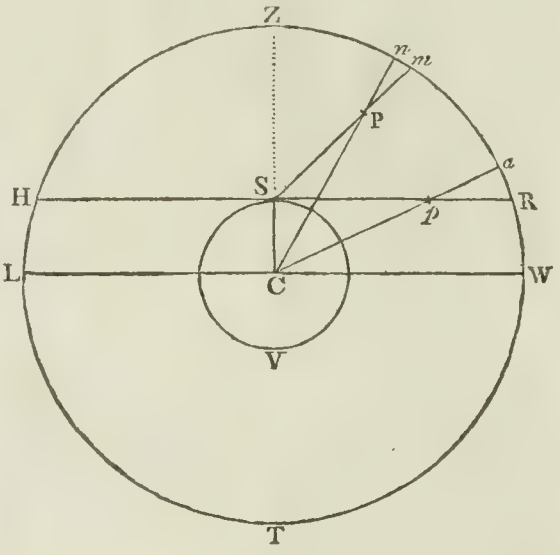
12. Another property of the atmoſphere is that of refracting the rays of light, by which means the heavenly bodies appear out of their true places. It is a principle of optics, that when a ray of light paſſes out of a denſer into a rarer medium, it is bent *towards* the perpendicular to the ſurface of the medium at the point where it enters. A ray of light therefore coming from any of the heavenly bodies, when it enters the top of the atmoſphere will be bent from its rectilinear courſe, towards a radius drawn to the earth's center, becauſe the radius is perpendicular to the ſurface of the atmoſphere; and as, in approaching the earth's ſurface, the denſity of the atmoſphere continually increaſes, the rays of light, as they deſcend, are conſtantly entering a denſer medium, and therefore the courſe of the ray will continually deviate from a right line towards a radius drawn to the earth's center, and deſcribe a curve; hence, at the ſurface of the earth the rays of light enter the eye of the ſpectator in a different direction from what they would have entered, if there had been no atmoſphere; therefore the *apparent* place of the body from which the light comes muſt be different from the *true* place; and as the courſe of the ray has been continually approaching to a radius drawn to the center of the earth, its direction, when it comes to the ſurface of the earth, muſt be inclined from its original direction, towards the zenith; therefore the *apparent* place of the body is *higher* than its *true* place. The ancients were not unacquainted with this effect: *Ptolemy* mentions a difference

difference in the riſing and ſetting of the ſtars in different ſtates of the atmoſphere; but he made no allowance for it in his computations. ALHAZEN, an Arabian optician, in the 11th century, obſerved the effect upon the circumpolar ſtars; but TYCHO was the firſt perſon who conſtructed a table for the refractions at different altitudes, for the refraction decreaſes from the horizon to the zenith, where it is nothing. In the mean ſtate of our air, the refraction in the horizon is 33′.

13. Another property of the refraction of the air is this, that it cauſes all the heavenly bodies to appear in the morning above the horizon, when they are actually below it; and in the evening they appear above, a little after they are actually ſet; for the diameter of the ſun being about 32′, the refraction in the horizon elevating it 33′, will cauſe it to appear above the horizon when the whole body is below. In climates nearer the equator, the refraction is leſs than it is here; and in colder regions it is much greater, and this is a happy proviſion for lengthening the appearance of the light at thoſe parts. GASSENDUS relates, that ſome *Hollanders* who wintered in *Nova Zembla*, in latitude 75°, were agreeably ſurpriſed with a ſight of the ſun 17 days before they expected him. To the ſame cauſe we muſt attribute another phænomenon, mentioned by PLINY, that the moon had been viſibly eclipſed when ſhe was in the weſt, at the ſame time that the ſun appeared above the horizon in the eaſt. MÆSTLINUS, in KEPLER, relates another inſtance of the ſame kind which fell under his own obſervation. Alſo, the decreaſe of refraction as the altitude above the horizon increaſes, makes the ſun and moon appear of an oval form, more particularly in the horizon. For ſuppoſe the diameter of the ſun to be 32′, and the lower limb to touch the horizon, then the mean refraction of that limb is 33′; but the altitude of the upper limb being then 32′, its refraction is only 28′ 6″, differing 4′ 54″ from the refraction of the lower limb; by this quantity therefore the vertical diameter is ſhortened, the lower limb being ſo much more elevated than the upper. The like is true at any other altitude, only in a ſmaller degree.

On Parallax.

14. When you refer an object to ſomething behind it, it will not appear in the ſame ſituation to two ſpectators ſituated at different places, unleſs the object be at an almoſt indefinitely great diſtance when compared with the diſtance of the two ſpectators; and the diſtance of theſe apparent places is called the *parallax* of that object. From the immenſe diſtance of the fixed ſtars therefore in reſpect to the diameter of the earth's orbit, they never appear to change their relative ſituations; on which account we may conſider them as a back-ground to which we may refer all the bodies in our ſyſtem; and we may conſider them as placed in the concave ſurface of a ſphere, of which the earth is the center. If therefore a planet, when it is in the ſame part of its orbit, be viewed from the two extremities of a diameter of the earth's orbit, it will appear in two different places amongſt the fixed ſtars; and the diſtance between theſe two places is called the *annual* parallax. In like manner, if a planet, or any of the bodies in our ſyſtem, were obſerved from the earth's center and ſurface, they would be referred to different places amongſt the fixed ſtars, and the diſtance of thoſe places is called the *diurnal* parallax, and this is what we have now occaſion to conſider.



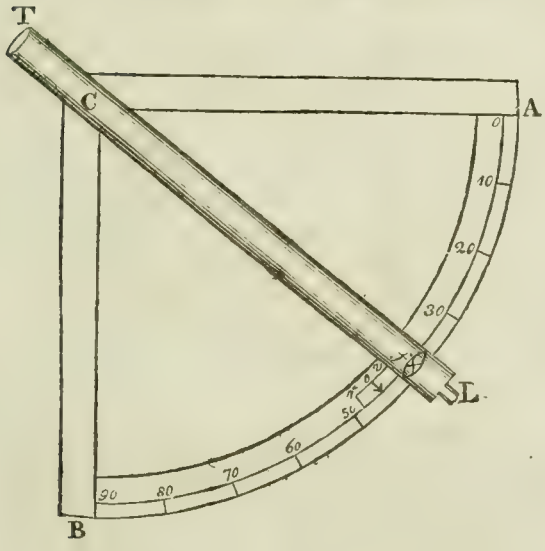
Let *C* be the center of the earth *SV*, *S* the place of a ſpectator, *Z* his zenith; and conceive the circle *ZT* to repreſent the ſphere of the fixed ſtars, and let *HSR* be a plane touching the earth at *S*, then that plane is called the *ſenſible horizon*; it dividing the viſible part *HZR* of the heavens from the inviſible part *HTR*. If a plane *LCW* be drawn through the center of the earth, parallel to *HZR*, it is called the *rational* horizon. Now the arc *RW* amongſt the fixed ſtars ſubtends no ſenſible angle at the earth, and hence we may ſuppoſe the two horizons there to coincide. Let *P* be a planet; and draw *CPn*, *SPm*; then the planet ſeen from *S* appears at *m*, and from *C* it would appear at *n*, and *nm* is called the *diurnal* parallax; becauſe at different parts of the day, when the planet is at different altitudes, the arc *mn* will be different. If the planet be in the horizon at *p*, and we draw *Cpa*, then *Ra* is the horizontal parallax, which is the greateſt of all; and from the horizon to the zenith it gradually decreaſes, and is nothing in the zenith. Alſo, the nearer a planet is to the earth, the greater is its parallax; for the nearer *P* is to *C*, the greater is the angle *CPS*, or *nPm*, which is the parallax, as that angle is meaſured by the arc *mn*. Now aſtronomers refer all their obſervations to the center of the earth, and conſider the place as ſeen from thence, to be the *true* place; therefore the *apparent* place *m* ſeen from

from the ſurface is *below* the *true* place *n* Hence, after an altitude is taken upon the ſurface of the earth, we muſt *add* the parallax correſponding to that altitude, in order to obtain the *true* altitude, or the altitude ſeen from the center of the earth, above the rational horizon. If we know the parallax of a body, we know its diſtance; for ſuppoſe we know the horizontal parallax *SpC*, then by plane trigonometry, ſin. *SpC* : radius :: *SC* : *Cp*; thus we get the diſtance *Cp* in terms of the radius of the earth.

15. It follows therefore from what we have obſerved (art. 12. 14) that after the altitude of an heavenly body is found by obſervation, it will want two corrections, one for refraction, and the other for parallax; the former to be ſubtracted, and the latter to be added. Thus you reduce the *obſerved* to the *true* altitude. As the fixed ſtars have no parallax, the only correction there neceſſary is that for refraction.

16. As the altitudes of the heavenly bodies are determined by an inſtrument called a *quadrant*, it may be here proper to give a general deſcription of it.

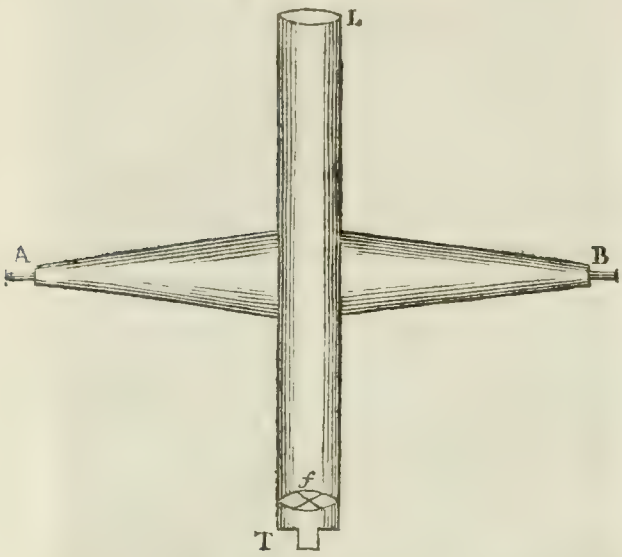
On the Aſtronomical Quadrant.



17. Let *C* repreſent the center of the quadrant, *CA*, *CB* two radii perpendicular to each other, thereby including an arc *AB* of 90 degrees; TL is a Teleſcope moveable about the center *C*; in the principal focus *f* of the object glaſs, there are fixed two fine wires at right angles to each other, interſecting each other in the center of the teleſcope; one of theſe wires is adjuſted parallel to the horizon, and conſequently the other will be perpendicular to it; the line joining the interſection of theſe wires, and the center of the object glaſs, is called the *axis* of the teleſcope, and ſometimes the *line of collimation*. The teleſcope moves againſt the limb of the quadrant, and carries with it a ſmall graduated piece of braſs rv, called a *vernier*, having a mark at *o* pointing to the diviſions of the limb. This point *o* is ſo adjuſted, that when it is ſet to point to *o* on the limb, the axis of the teleſcope is horizontal, and therefore an object in the horizon will appear upon the horizontal wire. When therefore the teleſcope is put into any other ſituation, and an object brought upon the horizontal wire, the point *o* of the vernier will be directed to a point of the limb which ſhows how many degrees high the object is above the horizon. The limb is generally divided into degrees, and each degree into three equal parts, by which the whole limb is divided into every 20 minutes. The vernier has alſo a certain number of diviſions upon it, ſo that by obſerving which two diviſions of the vernier and limb coincide, you can tell to what minute of the limb the mark *o* of the vernier is directed, and therefore know the altitude of the object above the horizon, in degrees and minutes. If no two diviſions ſhould coincide, there is another apparatus prefixed to the teleſcope at the limb of the quadrant, by which you can tell to a ſecond, the point of the limb againſt which *o* on the vernier ſtands: and thus you can aſcertain the altitude of an object to a ſecond. For a full explanation of theſe matters, we refer the reader to Mr. Vince's *Treatiſe on Practical Aſtronomy*. This inſtrument is ſometimes fixed to a perpendicular axis, and can be placed in any ſituation, ſo that the altitudes of any of the heavenly bodies, can be determined by it. Sometimes it is fixed againſt a very firm ſtone wall, having its plane exactly in the meridian, ſo that only meridian altitudes can be taken by it. This is called a *mural* quadrant; and all very large quadrants are thus fixed up; for the moſt accurate obſervations which aſtronomers want, are thoſe upon the meridian, by which (as will be afterwards ſhown) the *declinations* of the heavenly bodies may be found. After an altitude is taken, it muſt (art. 15) be corrected by ſubtracting the refraction and adding the parallax, by which we get the true altitude of the object above the rational horizon correſponding to the place of the obſerver.

On

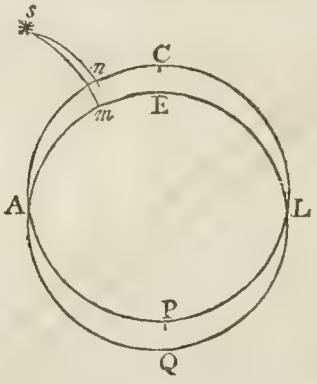
On the Tranſit Teleſcope.



18. A tranſit Teleſcope is a teleſcope moveable about an horizontal axis, and ſo adjuſted, that its axis may move exactly in the plane of the meridian. The annexed figure repreſents this inſtrument; TL repreſents the teleſcope, AB the axis about which it turns, each end of which is made cylindrical; theſe ends are each laid in an angular notch cut in a piece of braſs; and each of theſe pieces of braſs are moveable in a braſs frame fixed in firm ſtone pillars; each piece is moved by a ſcrew; that at one end acts againſt the under ſide of one of the braſs pieces, and gives that end of the axis AB of the teleſcope, a motion *perpendicular* to the horizon; and the other ſcrew acts againſt one of the ſides of the other braſs piece, and gives the axis AB a motion *parallel* to the horizon; by means of theſe two ſcrews therefore the teleſcope can be brought into any poſition. In the focus *f* of the object glaſs there are fixed two fine wires perpendicular to each other, and the line joining their interſection and the center of the object glaſs, is called the *axis* of the tube TL, or the *line of collimation* of the teleſcope. One of theſe wires is adjuſted perpendicularly to the horizon, and of courſe the other will then be parallel to it. After all the adjuſtments of this inſtrument are made, if the inſtrument be turned about the axis AB, the perpendicular wire moves exactly in the plane of the meridian; ſo that when any object comes to this wire, by means of a clock properly regulated, you get the time of its paſſage over the meridian. Sometimes there are fixed one or two more perpendicular wires, equidiſtant from this middle perpendicular wire. For an explanation of the methods of making theſe adjuſtments, we muſt refer to the work before-mentioned. This inſtrument is uſed to find the *right aſcenſions* of the heavenly bodies, as we ſhall afterwards explain.

Explanation of Terms.

19. Having mentioned the *declination* and *right aſcenſion* of the heavenly bodies, we will, before we proceed, explain theſe and ſome other terms, which we ſhall have occaſion to make uſe of. We have already explained the *equator* of the *earth*; and if the plane of this circle be extended as far as the fixed ſtars, it will there mark out a circle which is called the *celeſtial* equator; and if the axis of the earth be extended to the heavens, the two points marked out by it are called the *poles* of the *celeſtial* equator. Thus the heavens are divided into *northern* and *ſouthern* hemiſpheres, correſponding to thoſe on the earth. Now in the courſe of a year, the ſun appears to deſcribe a great circle in the ſphere of the fixed ſtars, called the *ecliptic*; this apparent motion of the ſun ariſes from the real motion of the earth about the ſun in the ſpace of a year; it is therefore, in fact, the earth that deſcribes the ecliptic. The equator and the ecliptic do not coincide, but are inclined to each other at an angle of about 23°. 28′, cutting each other at two oppoſite points, called the *equinoxes*; and this angle is called the *obliquity of the ecliptic*.



Let *AELQ* repreſent the celeſtial equator, *ACLP* the ecliptic, inclined to, and cutting each other in oppoſite points *A*, *L*, for all great circles divide each other into two equal parts. The ecliptic is divided into 12 equal parts, called *ſigns*; *aries* ♈, *taurus* ♉, *gemini* ♊, *cancer* ♋, *leo* ♌, *virgo* ♍, *libra* ♎, *ſcorpio* ♏, *ſagittarius* ♐, *capricornus* ♑, *aquarius* ♒, *piſces* ♓. The order of theſe is according to the apparent motion of the ſun. The firſt point of aries coincides with one of the equinoxes, as A, and conſequently the firſt point of libra coincides with the other equinox L. The firſt ſix ſigns are called *northern*, lying on the *north* ſide of the equator; and the laſt ſix are called *ſouthern*, lying on the *ſouth* ſide. When the motion of the heavenly bodies is according to the order of the ſigns, it is called *direct*, and when the motion is in a contrary direction, it is called *retrograde*. The *real* motion of all the planets is according to the order of the ſigns, but their *apparent* motion is ſometimes in a contrary direction, for reaſons which

which will afterwards appear. The equinoctial points A, L, are not fixed, but have a retrograde motion of about 50″ in a year; this is called the *preceſſion of the equinoxes*. The *zodiac* is a ſpace extending 8° on each ſide of the ecliptic, within which the motions of all the planets are performed.

20. If *s* be the place of a ſtar, and *sm* be a great circle perpendicular to the equator, then *Am* is called the *right aſcenſion* of the ſtar, and *sm* is called its *declination*.

If *su* be a great circle perpendicular to the ecliptic, then *An* is called the *longitude* of the ſtar, and *sn* is called its *latitude*. If therefore we know the right aſcenſion *Am*, and declination *ms* of an heavenly body, we know its place *s*; or if we know its longitude *An*, and latitude *ns*, its place is known. If half the ecliptic *ACP* be biſected in *C*, and the other half in *P*, then *C* and *P* are the beginnings of cancer and capricorn, and theſe are called *tropical* points. Two ſmall circles drawn through theſe two points, parallel to the equator, are called *tropics*; that paſſing through *C* is called the tropic of cancer, and that through *P*, the tropic of capricorn.

21. A body is in *conjunction* with the ſun, when it has the ſame longitude; and in *oppoſition*, when the difference of their longitudes is 180°.

22. The *elongation* of a body is its angular diſtance from the ſun, when ſeen from the earth.

23. The *antipodes* to a ſpectator upon the earth's ſurface, is that point upon the ſurface which is diametrically oppoſite to him.

24. If a body in the heavens be referred to the horizon by a vertical circle, by drawing a vertical circle through it, the diſtance of that point of the horizon from the north or ſouth points, is called its *azimuth*; and the diſtance from the eaſt or weſt points, is called its *amplitude*. Theſe four points are called the *cardinal* points.

25. The *primary* planets are thoſe which revolve about the ſun; and the *ſecondary* planets are thoſe which revolve about the primary, and theſe are alſo called *ſatellites*, or *moons*.

26. The *nodes* are the points where the orbits of the primary planets cut the ecliptic; and where the orbits of the ſecondary planets cut the orbits of their primaries. That node is called *aſcending*, where the planet paſſes from the ſouth to the north ſide of the ecliptic, and is marked thus, ☊; the other node is called *deſcending*, and is marked thus, ☋.

27. The *aphelion* is that point in the orbit of a planet which is furtheſt from the ſun; and the *perihelion* is that point which is neareſt to the ſun.

28. The *apogee* is that point of the earth's orbit which is furtheſt from the ſun, or that point of the moon's orbit which is furtheſt from the earth; and the *perigee* is that point of each orbit which is neareſt to the ſun, or earth.

29. The *apſis* of an orbit is either its apogee or perigee, aphelion or perihelion.

30. A *ſidereal* day is the interval between two ſucceſſive paſſages of the ſame fixed ſtar, over the meridian. Theſe days are all equal.

31. A *ſolar* day, is the interval between two ſucceſſive paſſages of the ſun over the meridian. Theſe days are unequal, on account of the unequal motion of the ſun in right aſcenſion. If therefore we compare a clock with the ſun, and adjuſt it to go 24 hours from the time the ſun leaves the meridian on any day, till it returns to it the next day, the clock will not continue to agree with the ſun, that is, it will not continue to ſhow 12 when the ſun comes to the meridian; as will afterwards more fully appear.

32. *Apparent* noon is the time when the ſun comes to the meridian; *true*, or *mean* noon is 12 o'clock, by a watch adjuſted to go 24 hours in a *mean* ſolar day. And the difference between *apparent* and *mean* noon is the *equation of time*.

33. A ſtar is ſaid to riſe or ſet *coſmically*, when it riſes and ſets at ſun riſing; and when it riſes or ſets at ſun ſetting, it is ſaid to riſe or ſet *achronically*.

34. A ſtar is ſaid to riſe *heliacally*, when, after having been ſo near to the ſun as not to be viſible, it emerges out of the ſun's rays, and juſt appears in the morning; and it is ſaid to ſet *heliacally*, when the ſun approaches ſo near to it, that it is about to immerge into the ſun's rays, and to become inviſible in the evening.

35. A *digit* is a twelfth part of the diameter of the ſun or moon.

36. A *conſtellation* is a collection of ſtars contained within ſome aſſumed figure, as *a ram*, a *dragon*, an *Hercules*, &c. The whole heavens is thus divided into conſtellations.

37. If an eye be in the plane of a circle, that circle appears a ſtraight line; therefore in the repreſentation of the circles of a ſphere upon a plane ſurface, thoſe circles, whoſe planes paſs through the eye, are repreſented by ſtraight lines.

38. Characters uſed for the ſun, moon, and planets.

☉ the Sun	♂ Mars
☽ the Moon	♃ Jupiter
☿ Mercury	♄ Saturn
♀ Venus	♅ Georgian.
⊕ the Earth	

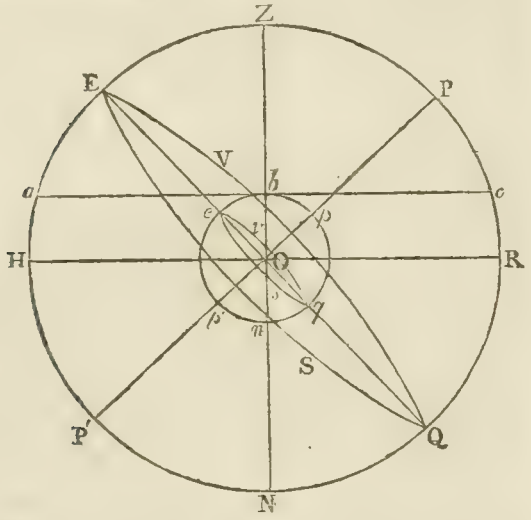
Characters uſed for the days of the week.

☉ Sunday	♃ Thurſday
☽ Monday	♀ Friday
♂ Tueſday	♄ Saturday.
☿ Wedneſday	

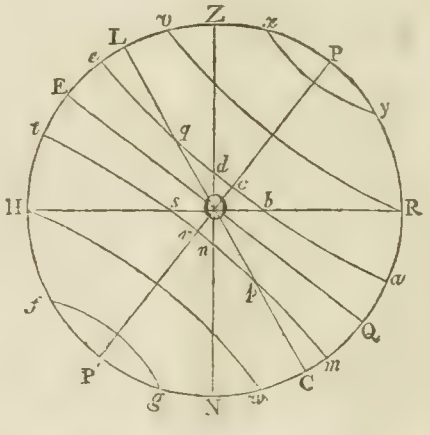
On the Doctrine of the Sphere.

39. A ſpectator upon the ſurface of the earth, conceives himſelf to be placed in the center of a concave ſphere, in which all the heavenly bodies are ſituated; and by conſtantly obſerving them, he perceives that far the greater number of them never change their relative ſituations, each riſing and ſetting at the ſame interval

of time, and at the ſame points of the horizon, and are therefore called *fixed* ſtars; but he finds that a few others, called *planets*, together with the *ſun* and *moon*, are conſtantly changing their ſituations, each continually riſing and ſetting at different points of the horizon, and at different intervals of time. Now the determination of the times of the riſing and ſetting of the heavenly bodies; the finding of their poſition at any given time, or the time from their poſition; the cauſes of the different lengths of days and nights; the changes of ſeaſons; and the like, conſtitute what is called the *doctrine of the ſphere*.



40. Let *pep'q* repreſent the earth, *b* the place of the ſpectator, *HZRN* the ſphere of the fixed ſtars; and although the fixed ſtars do not lie in the concave ſurface of a ſphere, of which the center of the earth is the center, yet on account of the immenſe diſtance, even of the neareſt of them, their relative ſituations are not at all affected by the motion of the earth, and therefore the place of a body in our ſyſtem may be referred to them, in the ſame manner as if they were placed as is here ſuppoſed. Now the circle *pbep'q* is the meridian of the ſpectator at *b*, and let this circle be extended to the heavens and there mark out the circle *PZEP'Q*, and it will be the celeſtial meridian of the place; whenever therefore a body in the heavens comes to this circle, it is in the meridian of the ſpectator *b*; and this circle divides the heavens into two hemiſpheres, the *eaſtern* and the *weſtern*. Let *abo* be a plane touching the earth at the place *b* of the ſpectator, then this plane will be his *ſenſible* horizon, becauſe it divides the viſible part *aZo* of the heavens, from the inviſible part *aNo*; and if a plane HR be drawn through the center of the earth, parallel to *abo*, it is called the *rational* horizon; and as the arc *Ro* ſubtends no ſenſible angle at the earth, theſe planes, in reſpect to the ſphere of the fixed ſtars, may be conſidered as coinciding. Now as the earth revolves daily about its axis, the heavenly bodies muſt ſucceſſively riſe and ſet in that time, and appear to deſcribe circles which are perpendicular to the earth's axis, and conſequently parallel to each other. Let *pp'* be the axis of the earth, *p* the north pole, *p'* the ſouth pole; and let *evqs* be the equator; then if the plane of the equator be extended up to the heavens, it will there mark out a circle *EVQS* called the *celeſtial* equator; and if *pp'* be produced to the heavens to *P*, *P'*, theſe points are called the poles of the celeſtial equator; and the ſtar neareſt to theſe is called the *pole* ſtar. Now, although the earth in its orbit continually changes its place, yet as the axis always continues parallel to itſelf*, the points *P*, *P'*, will not, from the immenſe diſtance of the fixed ſtars, be ſenſibly altered. Let *n* be the antipodes to *b*, then if the diameter *bn* be produced to *Z* and *N*, *Z* is the zenith of the ſpectator, and *N* the nadir. Thus we may conceive the great circles, and any places upon the earth's ſurface, to be transferred to the heavens. Now the latitude of the place *b* upon the earth's ſurface is meaſured by the degrees of the arc *be*; but the arc *ZE* contains the ſame number of degrees as the arc *be*, therefore the arc *ZE* in the heavens meaſures the latitude of *b* the ſpectator; and the degrees of the arc *bp*, which meaſures the diſtance of the ſpectator from the pole, contains the ſame number of degrees as the arc *ZP*. Hence, as the equator, zenith, poles, and horizon in the heavens, may be conſidered as correſponding to the equator, place of the ſpectator, poles, and horizon of the earth, and the angular diſtances of the former are reſpectively equal to thoſe of the latter, we may, for our preſent purpoſe, leave out the conſideration of the earth, and only conſider the equator, zenith, poles, and horizon of the heavens.



41. Let therefore *PZEHP'NQR* repreſent the celeſtial meridian to the place of a ſpectator upon the

* This is not accurately true, the earth's axis varying a little from its parallelifm from the attraction of the moon. This is called the *nutation* of the earth's axis, and was diſcovered by DR. BRADLEY.

earth

earth whoſe zenith is *Z*, the ſpectator being ſuppoſed in *north* latitude; and let the figure repreſent either the eaſtern or weſtern hemiſphere of the heavens; we muſt therefore conceive this figure to repreſent half a globe, and all the lines upon it to repreſent circles; and as, if we conceive the eye to be vertical to the middle point O of the figure, all the circles which paſs through that point will appear right lines, therefore the right lines *ZON*, *POP'*, *EOQ*, *HOR*, muſt be conſidered as ſemicircles, *HOR* repreſenting the horizon, *EOQ* the equator, *ZON* a vertical circle paſſing through the zenith and nadir, perpendicular to the horizon, and this is called the *prime vertical*, cutting the horizen in *O* the eaſt or weſt point of the horizon, according as the figure repreſents the eaſtern or weſtern hemiſphere. For the ſpectator being ſuppoſed to be at *Z*, and looking along the meridian *ZPR* towards the north pole *P*, *R* muſt be the north point of the horizon, and conſequently the oppoſite point *H* will be the ſouth point; and as the point *O* biſects the points *H*, *R*, it muſt repreſent the eaſt or weſt point. All theſe circles are great circles, their planes paſſing through the center of the ſphere. Draw the ſmall circles *wH*, *mt*, *ae*, *Rv* parallel to the equator. Now the ſemicircle *POP'* biſects the ſemicircle *EOQ* in *O*, and therefore it biſects the ſemicircles *ae*, *mt*, in *c* and *r*. Now the ecliptic, or that circle which the ſun appears to deſcribe in a year, cuts the equator at an angle of 23°. 28'; let therefore the circle *COL* cut the circle *EOQ* in that angle, and *COL* will repreſent the ecliptic.

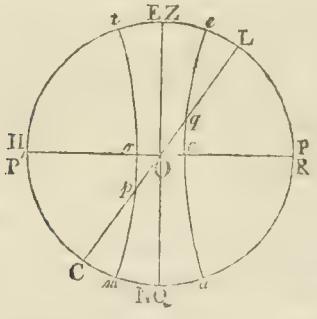
42. Now as all the heavenly bodies, in their apparent diurnal motion, deſcribe either the equator, or ſmall circles parallel to the equator, according as the body is in or out of the equator, if we conceive the figure to repreſent the eaſtern hemiſphere, *QE*, *ae*, *mt*, may repreſent their apparent paths as they move from the meridian under the horizon till they come to the meridian above the horizon, and the points *O*, *b*, *s*, are the points of the horizon where they riſe. Now *ae*, *QE*, *mt*, are biſected in *c*, *O*, *r*; therefore *eb*, the part above the horizon is greater than *ab* the part below; *EO* the part above is equal to *OQ* the part below; and *ts* the part above is leſs than *sm* the part below; and as *Z* repreſents the place of the ſpectator, it follows, that thoſe heavenly bodies which are on the *ſame* ſide of the equator as the ſpectator, will be *longer* above the horizon than below; thoſe bodies which are *in* the equator, are *as long* above the horizon as below; and thoſe bodies which are on the *oppoſite* ſide of the equator to that of the ſpectator, will be a *ſhorter* time above the horizon than below. Alſo, the bodies deſcribing *ae*, *QE*, *mt*, riſe at *b*, *O*, *s*; that is, a body which is on the *ſame* ſide of the equator with the ſpectator, riſes at *b*, from the eaſt point *O* towards the north point *R* of the horizon; a body which is *in* the equator, riſes at *O* in the eaſt; and thoſe bodies which are on the *oppoſite* ſide of the equator to the ſpectator, riſe at *s*, from the eaſt point *O* towards the ſouth point *H*. When the bodies come to *O*, *d* or *n*, they are in the prime vertical, or in the eaſt; hence, a body on the *ſame* ſide of the equator with the ſpectator, comes to the eaſt *after* it is riſen; a body on the *contrary* ſide, *before* it riſes; and a body *in* the equator, when it riſes. As this figure may repreſent the weſtern hemiſphere, the ſame circles *ea*, *EQ*, *tm*, will repreſent the motion of the heavenly bodies as they deſcend from the meridian above the horizon to the meridian below. Hence, a body is at its greateſt altitude when it is upon the meridian; and at equal altitudes at equal diſtances on each ſide of the meridian, if the body have not changed its declination. Now as all the *fixed ſtars* conſtantly retain their ſame ſituations, each muſt always riſe and ſet at the ſame point of the horizon, and continue for the ſame length of time above the horizon; in theſe bodies, therefore, there will be no variety of appearance. But the *ſun*, *moon*, and *planets* are continually changing their ſituation, and are ſometimes on one ſide of the equator and ſometimes on the other. We will therefore next deſcribe the phænomena attending theſe bodies.

43. The ſemicircle *COL* repreſents one half of the ecliptic, or one half of the ſun's apparent yearly motion; and let C be the firſt point of capricorn, and L the firſt point of cancer. If we therefore ſuppoſe the *ſun* to be at any point *p*, on the *contrary* ſide of the equator to that of the ſpectator, on that day, by the diurnal rotation of the earth, he appears to deſcribe the circle *mpn rst*; when he is at *m*, it is midnight; when he comes to *s*, he riſes; and when he comes to *t*, it is noon; and from noon to midnight he will deſcribe the path *tsrnpm* in the weſtern hemiſphere. Now as *ms* is greater than *st*, the ſun will be longer below the horizon than above, and therefore the nights will be longer than the days; and the ſun riſes at *s* from the eaſt towards the ſouth, and ſets as far from the weſt towards the ſouth. When the ſun is *in* the equator at *O*, his diurnal motion is then *QOE*; and as $QO = OE$, he is as long below as above the horizon, and the days and nights are equal; and he riſes in the eaſt at *O*, and ſets in the weſt. When the ſun is at any point *q*, on the *ſame* ſide of the equator with the ſpectator, on that day he deſcribes, by his diurnal motion, the circle *abcdqe*, and as *ab* is leſs than *be*, he is longer above the horizon than below it, and the days are longer than the nights; and he riſes at *b* from the eaſt O towards the north, and ſets from the weſt towards the north. It is manifeſt therefore, that the length of the days increaſes from the time the ſun leaves *C*, the firſt point of capricorn, till he comes to *L*, the firſt point of cancer; and then they gradually decreaſe again from the time the ſun leaves *L* till he comes to *C*. If *ae*, *mt*, be equidiſtant from *EQ*, then will $be = ms$, and $ab = st$; hence, when the ſun is at equal diſtances from the equator, and on oppoſite ſides, the length of of the day at one time is equal to the length of the night at the other, and the length of the night at the former is equal to the length of the day at the latter time. At every place therefore, the ſun, in the courſe of a year, is half a year above the horizon and half a

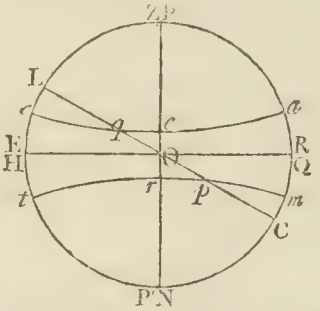
year below.* Hence, the different lengths of days and nights, and the variety of ſeaſons, ariſe from the ſun being ſometimes on one ſide of the equator, and ſometimes on the other, or from the ecliptic CL being inclined to the equator, or from the axis of the earth which coincides with *PP'*, being inclined to the ecliptic CL, the path of the earth.

44. As the ſun illuminates one half of the earth, or 90° all round about that place to which he is vertical, when he is *in* the equator, he will juſt illuminate as far as each pole; when he is on the north ſide of the equator, the north pole will be within the illuminated part, and the ſouth pole will be in the dark part; and when the ſun is on the ſouth ſide of the equator, the ſouth pole will be within the illuminated part, and the north pole in the dark part. When the ſun is got to 23°. 28′, (his greateſt diſtance from the equator,) he then illuminates the earth to 23°. 28′ on the other ſide of the pole; and if two circles be deſcribed about the poles at that diſtance, that about the *north* pole is called the *arctic* circle, and that about the ſouth pole is called the *antarctic* circle. Theſe are alſo called *polar* circles. If two circles be deſcribed upon the earth, parallel to the equator, at the diſtance of 23°. 28′ from it, they are called *tropical* circles, or the *tropics*.

45. Let *Hw*, *Rv*, *xy*, be ſmall circles parallel to *EQ*. Now it is manifeſt, that a body which deſcribes the circle *Rv*, or any circle *xy* nearer to *P*, never ſets; and ſuch circles are called circles of *perpetual apparition*; and the ſtars which deſcribe them are called *circumpolar* ſtars. The body which deſcribes the circle *wH*, juſt becomes viſible at *H*, and then it inſtantly deſcends below the horizon; but the bodies which are nearer to *P'* are never viſible. Such are the phænomena of the diurnal motions of the heavenly bodies, when the ſpectator is ſituated any where between the equator and the poles; and this is called an *oblique* ſphere, becauſe all the bodies riſe and ſet obliquely to the horizon.



46. If the ſpectator be at the *equator*, then *E* coincides with *Z*, becauſe *Z* anſwers to the place of the ſpectator on the earth, and *EQ* coincides with *ZON*, conſequently *P'O* coincides with *HOR*. Hence, as the equator *EQ* is perpendicular to the horizon, the circles *ace*, *mrt*, parallel to *EQ*, are alſo perpendicular to the horizon, and therefore the horizon biſects them. To a ſpectator therefore at the equator, all the heavenly bodies in their diurnal motion are as long above the horizon as below; and they riſe and ſet at right angle to it, on which account, this is called a *right* ſphere. Hence, at the equator the days and nights are each always 12 hours long. There will however be ſome variety of ſeaſons, as the ſun will recede to *L* and *C*, 23°. 28′ on each ſide of the ſpectator. When the ſun is in the equator, he will be vertical to the ſpectator at noon; for one half of the year he will come to the meridian to the north of the zenith, and the other half of the year, to the ſouth of the zenith.



47. If the ſpectator be at the *pole*, then *P* coincides with *Z*, and *PP'* coincides with *ZN*; conſequently *EQ* concides with *HOR*. Hence, the circles *ea*, *tm*, parallel to the equator, are alſo parallel to the horizon; therefore as a body in its diurnal motion deſcribes a circle parallel to the horizon, all the fixed ſtars which are at any time above the horizon, muſt continue above the horizon, and thoſe which are below, muſt continue below; and the ſpectator always ſees the ſame face of the heavens, becauſe none of the bodies, by their diurnal motion, can either riſe or ſet. This is called a *parallel* ſphere, becauſe the diurnal motion of all the heavenly bodies is parallel to the horizon. But as the ſun deſcribes the ecliptic *COL*, and *CO=OL*, and the part *CO* is never brought above the horizon, by the diurnal motion, and the part *OL* is never carried below, the ſun muſt be half a year below the horizon, and half a year above, ſo that there is half a year day, and half a year night.

48. All thoſe things will be very evident by means of a celeſtial globe. Place the axis obliquely to the

* This is not accurately true, becauſe the ſun's motion in the ecliptic is not uniform, on which account he is not exactly as long on one ſide of the equator as on the other; the ſummer half year, or the time from the ſun's leaving the firſt point of aries till he comes to the firſt point of libra, is about 8 days longer than the winter half year.

horizon,

horizon, and you will see that all the circles parallel to the equator are cut into two unequal parts; and the more you elevate the pole, or the nearer you bring the spectator to the pole, the greater will be the difference of those parts; that is, as the spectator approaches the pole, the length of the days will be increased, and that of the nights decreased, when the sun is on the *same* side of the equator as the spectator; and the length of the days will be decreased and that of the night increased, when the sun is on the *contrary* side. If you bring the poles down to the horizon, you will see that all the parallels to the equator are cut into two equal parts, so that there is always equal day and night to a spectator at the equator. If you bring the pole to the zenith, or if the spectator be at the pole, and you turn the globe about, one half of the ecliptic will continue above the horizon and the other half below, so that the sun will be half a year above the horizon, and half a year below. Thus it appears, that as you travel from the equator to the poles, for one half of the year the length of the day will increase from 12 hours to half a year; and for the other half of the year, the length of the night will increase from 12 hours to half a year.

49. The greater degree of heat in summer than in winter, arises from three causes. 1. The sun is a longer time above the horizon in summer than in winter. 2. The sun rising higher above the horizon in summer than in winter, more rays will fall upon the earth in the former than in the latter season. 3. The higher the sun is above the horizon, the greater is the force of the rays. Moreover, the parts which are heated, retain their heat for some time, which, with the additional heat acquired, make it continue to increase after the middle of the summer; and this is the reason why July is generally hotter than June. And for the same reason, we frequently find it hotter at 2 o'clock in the afternoon than it is at noon. Likewise, bodies retain their cold for some time, and thus it happens, that January is generally colder than December.

50. The orbits of all the planets, and of the moon, are inclined to the equator, and therefore their motions amongst the fixed stars must be in circles inclined to the equator: hence, similar phænomena to those of the sun will take place in the times of their respective revolutions. All the different appearances must therefore take place in the moon, in the course of a month. It is evident also, that these variations must be greater or less, as the orbits are more or less inclined to the equator; hence, they must be greater in the moon than in the sun, the moon's orbit being more inclined to the equator than the sun's.

51. The altitude of the pole of the heavens above the horizon, is equal to the latitude of the place. For the arc ZE (fig. 2d. page xvi) is the measure of the latitude of the place; but $PR = ZR$, each being a $\frac{1}{4}$; take away ZP which is common to both, and $RZ = PE$. Hence, PZ is the complement of ZE.

52. If there were a star exactly at the pole P, then by taking its altitude PR above the horizon, and subtracting it from a quadrant, and correcting it for refraction, we should get the latitude of the place; but as there is not a star in that place, the latitude may be found by observing the greatest and least altitude of a circumpolar star, and applying the correction for refraction, and half the sum will be the altitude of the pole. For if x be the circle described by a circumpolar star, then $xR = PR + Px$, $yR = PR - Py$, we have $xR = PR + Px$, and $yR = PR - Py$; add these equations together, and we have $xR + yR = 2PR$, therefore $\frac{1}{2}(xR + yR) = PR$ the latitude.

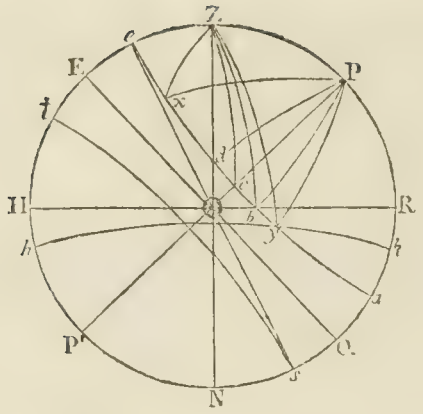
53. The angle which the equator makes with the horizon, is equal to the complement* of the latitude of the place. For HE is the measure of the angle HOE; and as $HZ = 90°$, HZ is the complement of ZE, and ZE is the latitude.

54. Hence, the latitude of a place may be found thus. Let sOe (fig. page xiv) be the ecliptic, and when the sun comes to s it is at its greatest south declination, at which time the days are longest, and at t its south declination is the greatest, at which time the days are shortest; also, eH is the meridian altitude of the sun on the longest day, and tH is the meridian altitude on the shortest day. Now as $tE = Et$ we have $eH = EH + Et$, and $tH = EH - Et = EH - E$; add these equations together, and we get $eH + tH = 2EH$, therefore $\frac{1}{2}(eH + tH) = EH$ the complement of the latitude. The complement of latitude is therefore equal to half the sum of the true meridian altitudes of the sun on the longest and shortest days.

55. Half the difference of the meridian altitudes of the sun on the longest and shortest days, is equal to the inclination of the equator to the ecliptic. For the difference between eH and tH is et, and the half of et is Ee, which measures the angle EOe, the inclination of the equator to the ecliptic.

* The *complement* of an arc, or angle, is what it wants of 90°; and the *latitude* here is what an arc, or angle wants of 90°. All co-latitude means the complement of the altitude, and the same for other quantities.

56. Lo-



56. Let *hk* be a circle parallel to the horizon *HOR*, and 18° below it; and let *aybcdxe* be any circle parallel to the equator, deſcribed by an heavenly body in the eaſtern hemiſphere; and draw the circles *Py*, *Pb*, *Pd*, *Px*, and *Zy*, *Zb*, *Zc*, *Zx*. Now (as has been already explained) when the ſun comes to *y*, twilight begins; when any body comes to *b*, it riſes; when it comes to *c*, it is at the middle point between *a* and *e*; when it comes to *d*, it is due eaſt; and let *x* be the place at any other time. Now let us ſuppoſe this body to be the ſun, and not to change its declination in its paſſage from *a* to *e*; and let us ſuppoſe a clock to be adjuſted to go 24 hours in one apparent diurnal revolution of the ſun, or from the time it leaves any meridian till it returns to it again; then the ſun will always approach the meridian at the rate of 15° in an hour; alſo, the angle which the ſun deſcribes about the pole, varies at the ſame rate, becauſe any arc *xe*, which the ſun has to deſcribe before it comes to the meridian, meaſures the angle *xPe*, called the *hour angle*. If therefore we ſuppoſe the clock to ſhow 12 when the ſun is on the meridian at *a* and *e*, it will be 6 o'clock when he is at *c*. And as the ſun deſcribes angles about the pole *P* at the rate of 15° in an hour, the angle between any circle *Px*, paſſing through the ſun at *x*, and the meridian *PE*, converted into time at the rate of 15° for an hour, will give the time from *apparent* noon, or when the ſun comes to the meridian. Alſo, when the ſun is at any point *x*, the angle *xZP* is his azimuth from the north; *xZ* is the complement of his altitude; and *xP* is the complement of his declination. This being premiſed, we ſhall proceed to give the ſolution of a few problems which will be found very uſeful in practical aſtronomy and navigation.

57. The declination of a body, is the difference between its meridian altitude, and the complement of the latitude. For the declination *Ee*=*He*—*HE*, where *HE* is the meridian altitude, and *HE* is the complement of latitude, by art. 53. Alſo, the declination *Et*=*HE*—*Ht*, and *Ht* is the meridian altitude.

58. *Given the latitude of the place, and the declination of the ſun, to find the time of his riſing, and his azimuth at that time.*

Let *ae* be the parallel of declination deſcribed by the ſun on the given day; then when the ſun comes to *b*, he riſes. Now in the ſpherical triangle *bZP*, *bZ*=90° (the zenith being 90° from the horizon), *bP*=the complement of the ſun's declination, and *PZ*= the complement of latitude; and by ſpherical trigonometry, radius: cotan. *bP*:: cotan. *ZP*: cof. *ZPb*, or, radius: tan. decl.:: tan. lat.: cof. *ZPb*, the *hour angle* from *apparent* noon; which converted into time at the rate of 15° for an hour, and ſubtracted from 12 o'clock, gives the *apparent* time of riſing, or the hour at which the ſun riſes, ſuppoſing it be 12 o'clock when he comes to the meridian.

Alſo, ſin. *ZP*: radius:: cof. *bP*: ſin. *PZb*, or, cof. lat.: radius:: ſin. decl.: cof. of the *azimuth* from the north.

Ex. Given the latitude of Cambridge 52°. 12′. 35″, to find the time of the ſun's riſing on the longeſt day, and his *azimuth* at that time; aſſuming the ſun's greateſt declination 23°. 28′.

By logarithms the operation will ſtand thus:

rad. - -		10,0000000
tan. 23° 28′. 0″	-	9,6376106
tan. 52. 12. 35	-	10,1104699
cof. 124. 2. 47*	-	9,7480805

Convert this into time, and it gives 8h. 19′. 6″, which ſubtracted from 12, there remains 3h. 40′. 54″, the *apparent* time at which the ſun riſes. Alſo,

cof. 52°. 12′. 35″	-	0,2127004 ar. co.
radius - -		10,0000000
ſin. 23. 28 -		9,6001181
cof. 49. 28. 9 - -		9,8128185

Hence, on the longeſt day, the ſun riſes 49°. 28′. 9″ from the north.

59. *To find the ſun's altitude at 6 o'clock, on the ſame day.*

At 6 o'clock the ſun is at *c*, and *ZPc* is a right angle; hence, radius: cof. *ZP*:: cof. *Pc*: cof. *Zc*, or, radius: ſin. lat.:: ſin. dec.: ſin. of the *altitude*.

* This log. 9,7480805 is found in the tables to be the log. cofine of 55°. 57′. 13″, but as the angle is manifeſtly greater than 90°, we muſt take its ſupplement. In the ſolution of ſpherical triangles, ambiguous cafes will frequently ariſe, for the determination of which, the reader is referred to Dr. Maskelyne's excellent Introduction to Taylor's Logarithms; or to Mr. Vince's *Treatiſe on plane and ſpherical Trigonometry*, containing an explanation of the *Conſtruction and Uſe of Logarithms*.

By logarithms the operation is thus:

radius - - -	10,0000000
fin. 52°. 12′ 35″ -	9,8977695
fin. 23. 28. 0 -	9,6001181
fin. 18. 20. 32 the *altitude*	9,4978876

60. *To find the time when the Sun comes due eaſt, and his altitude at that time, on the ſame day.*

The ſun is due eaſt when he comes to the prime vertical at d, and dZP is a right angle; hence, cof. ZP : radius :: cof. dP : cof. Zd, or, fin. lat. : radius :: fin. dec. : fin. of the *altitude*.

Alſo, radius : cotan. Pd :: tan. PZ : cof. ZPd, or, radius : tan. dec. :: cotan. lat. : cof. ZPd the *hour angle*, which converted into time, gives the time from *apparent* noon.

By logarithms, the operation is thus:

fin. 52°. 12′. 35″ -	0.1022305 ar. co.
radius - - -	10,0000000
fin. 23. 28. 0 - -	9,6001181
fin. 30. 15. 31 the *altitude*	9,7023486
radius - - -	10,0000000
tan. 23°. 28′. 0″ -	9,6376106
cot. 52. 12. 35 -	9,8895301
cof. 70. 19. 44 = ZPd -	9,5271407

This angle 70°. 19′. 44″ converted into time, gives 4h. 41′. 19″ the time from *apparent* noon.

61. *Given the latitude of the place, the Sun's declination and his altitude, to find the hour.*

Let x be the ſun's place; then in the triangle xZP, xZ is the complement of the altitude, xP is the complement of declination, and PZ is the complement of the latitude, all which are given; hence, by ſpherical trigonometry, fin. $xP \times$ fin. ZP : $\overline{\text{rad.}}^2$ :: fin. $\frac{1}{2}(Px + PZ + Zx) \times$ fin. $\frac{1}{2}(Px + PZ - Zx)$: $\overline{\text{cof. } \frac{1}{2} ZPx}^2$, therefore the hour angle ZPx is known, which converted into time, gives the time from *apparent* noon.

Ex. Given the latitude 34°. 55′ N. the ſun's declination 22°. 22′. 57″ N. and his true altitude 36°. 59′. 39″, to find the *apparent* time.

Here, $ZP = 55°.\ 5'$, $Zx = 53°.\ 0'.\ 21''$, $Px = 67°.\ 37'.\ 3''$; and the operation by logarithms is thus:

Px = 67°. 37′. 3″	- -	ar. co. fin. 0,034019
ZP = 55. 5. 0	- -	ar. co. fin. 0,086193
Zx = 53. 0. 21		
Sum 175. 42. 24		
½ Sum 87. 51. 12	- - -	fin. 9,999694
Zx = 53. 0. 21		
Dif. 34. 50. 51	- - -	fin. 9,756932
		2)19,876838
29. 47. 44 = ½ ZPx	- - -	cof. 9,938419

Hence, $ZPx = 59°.\ 35'.\ 28''$, which converted into time, gives 3h. 58′. 22″. the time from *apparent* noon.

This problem is uſed in finding the longitude by the lunar method.

62. *Given the latitude of the place, and the Sun's declination, to find the time when the twilight begins.*

Twilight begins when the ſun comes to y, 18° below the horizon; hence, $Zy = 108°$; alſo, Py is the complement of declination, and ZP is the complement of latitude; hence, fin. $yP \times$ fin. ZP : $\overline{\text{rad.}}^2$ :: fin. $\frac{1}{2}(PZ + Py + 108°) \times$ fin. $\frac{1}{2}(PZ + Py - 108°)$: $\overline{\text{cof. } \frac{1}{2} yPZ}^2$, therefore yPZ is known, which converted into time, gives the time from *apparent* noon, when twilight begins.

This rule being the ſame as the laſt, the method of calculation is the ſame.

63. *To find where the longeſt day is 24 hours.*

Let QR (ſee fig. 2d on page x) = 23°. 28′, then the ſun on the longeſt day deſcribes the circle Rv, and this circle juſt touching the horizon at R, it will wholly be above the horizon, therefore the ſun continues above the horizon for its whole apparent diurnal motion, that is, for 24 hours. Now $QR = EH =$ the complement of latitude, by article 53; hence, the latitude is 66°. 32′; therefore the ſpectator is at the arctic circle, as appears by art. 44.

64. To a ſpectator at the ſame place, on the ſhorteſt day the ſun is at the diſtance EH on the other ſide of the equator, and at that time he deſcribes the circle wH in his diurnal motion, and therefore he continues 24 hours below the horizon; therefore the longeſt night is 24 hours. Now we have already obſerved (art. 48.), that as a ſpectator moves from the equator to the poles, the length of the day increaſes from 12 hours to half a year; hence, the longeſt day is more than 24 hours within the polar circle, and leſs than 24, on every other part of the earth.

65. *To find at what time of the year the twilight laſts juſt all night.*

Let

Let *as* be the parallel described by the sun at that time, then *Ra* must be 18°, for at that distance below the horizon, twilight begins; hence, 18°+dec. $\mathfrak{Q}a$ = $R\mathfrak{Q}$ = EH = comp. of latitude, by art. 53.; therefore, by transposition, sun's dec. = comp. of lat. −18°. But if the sun be on the other side of the equator at *m*, then *Rm* = 18°, and 18°−declin. $\mathfrak{Q}m$ = $R\mathfrak{Q}$ = EH = comp. of lat. therefore, sun's dec. = 18°−comp. of latitude. Look therefore into the *Nautical Almanac*, and see on what day the sun has this declination, and you have the time required.

Ex. Let the latitude be 52°. 12′ N. then its complement is 37°. 48′; hence, the declination is 37°. 48′ −18° = 19°. 48′ N. which answers to about May 19, and July 24, at which times there is twilight just all night. Therefore from May 19 to July 24 there will be twilight all night.

66. The greatest value of $\mathfrak{Q}a$ is 23°. 28′, therefore when *aR* is 18°, the greatest value of $\mathfrak{Q}R$ is 41°. 28′; if therefore $\mathfrak{Q}R$ be greater than 41°. 28′, then *Ra* must always be greater than 18°, and therefore there will be no twilight when the sun is at *a*; hence, when the complement of latitude is greater than 41°. 28′, or when the latitude is less than 48°. 32′, there never can be twilight all night.

Astronomical Terms, arising from different Situations of the Spectator upon the Earth.

67. By means of the two tropics and two polar circles upon the earth, the whole surface is divided into five parts, called *zones*: that which is included between the tropics, is called the *torrid zone*: the two parts lying between the tropics and the polar circles, are called the *temperate* zones: the two parts within the polar circles, are called the *frigid* zones. The inhabitants of these zones are distinguished by the different directions of their shadows arising from the sun. They who live between the tropics, or in the *torrid* zone, have the sun vertical to them at noon twice in the year; thus, an inhabitant in 10° north latitude has the sun vertical to him when its declination is 10° north. And, in general, this will happen when the latitude of the inhabitant is equal to the declination of the sun, and both of the same kind, that is, both north, or both south. At all other times, when the sun comes to the meridian, the shadow is either to the north or the south of the zenith. The inhabitants of this zone are called *Amphiscii*, that is, having both kinds of meridian shadows.

68. They who live in the *temperate* zones, have their shadows at noon always the same way, and are therefore called *Heteroscii*, that is, having only one kind of meridian shadow.

69. They who live in the *frigid* zones, have, when the days are more than 24 hours long, the sun moving all round them, and therefore their shadows are cast all round them, and hence they are called *Periscii*.

70. The inhabitants of the earth have also been distinguished into three kinds, in respect to their relative situations. They who live at opposite points of the same parallel to the equator, are called, in respect to each other, *Periæci*. These have the same seasons of the year; but it is midnight to one when it is noon, or midday, to the other.

71. They who live under the same meridian and in opposite parallels, that is, in two parallels to the equator, and equidistant from it, are called *Antæci*. These have day and night at the same time, but different seasons, it being summer with one when it is winter with the other.

72. They who live under opposite meridians and opposite parallels, are called *Antipodes*. These have their days and nights, and also their seasons, opposite, that is, it is day with one when it is night with the other, and summer with one when it is winter with the other.

To find the Right Ascension and Declination of the Heavenly Bodies.

73. The foundation of all astronomy is to determine the places of the fixed stars, in order to find, by a reference to them as fixed objects, the places of the other bodies at any given times, by which means you can trace out their paths in the heavens. The positions of the fixed stars are found from observation, by finding their right ascensions and declinations, for it is manifest, that if we know the right ascension *Am*, and declination *ms*, we know the point *s* (see fig. page viii). Now the *declination* is found thus. Find the latitude of the place by the 52d or 54th articles, and then we know *EH* the complement of latitude (see the last figure). By the astronomical quadrant, described in art. 17, find the true meridian altitude *He* of the body; then the difference between *EH* and *He* is *Ee*, the declination required.

74. To find the *right ascension* of a body. As the earth revolves uniformly about its axis, the apparent daily motion of all the heavenly bodies, arising from this motion of the earth, must be uniform; and as this motion is parallel to the equator, the interval of the times in which any two stars pass over the meridian, is in proportion to the corresponding arc of the equator which passes over the meridian in the same interval. Now let a clock be adjusted to go 24 hours in the time the earth makes a rotation about its axis, then it describes about its axis an angle of 15° every hour, and every point of the equator, and all the circles which are parallel to it, describe 15° in an hour; and all the stars appear to revolve at the same rate; so that if two stars should differ 15° in right ascension, one of them would pass over the meridian an hour after the other. And, in general, if you take the interval of the times in which any two stars pass the meridian, and convert that interval of time into degrees, at the rate of 15° for an hour, you will have the difference of the right ascensions of those two stars; if therefore you know the right ascension of one of the stars, you will know the right ascension of the other. Thus, by knowing the right ascension of one star, and comparing all the other heavenly bodies with

it, you will get their right aſcenſions. For the method of finding the right aſcenſion of ſome one ſtar, we refer the reader to Mr. Vince's *Complete Syſtem of Aſtronomy*. The time when any body comes to the meridian is known by its paſſage over the middle perpendicular wire of the tranſit teleſcope, as deſcribed in art. 18. The right aſcenſion is reckoned both by time and by degrees; thus, we ſay a ſtar has 15°, 30°, 45°. &c. right aſcenſion, or its right acenſion is 1 hour, 2 hours, 3 hours, &c.

75. But a more ready and practical method of finding the right aſcenſion of a body, is thus: Let a clock be adjuſted to go 24 hours in the time in which the earth revolves about its axis, in which time all the fixed ſtars appear to have made one revolution; and a clock thus adjuſted is ſaid to be adjuſted to *ſidereal* time. Now let the clock begin its motion from oh. o'. o''. at the inſtant the firſt point of aries is upon the meridian, from which point we begin to reckon the right aſcenſion; then, when any ſtar comes to the meridian, the clock would ſhow the apparent right aſcenſion of the ſtar, provided it was ſubject to no error, becauſe it would then ſhow, at any time, how far the firſt point of aries was from the meridian, reckoning 15° for every hour. But as every clock is ſubject to err, we muſt be able at any time to find its error. To do this, we muſt, when a ſtar, whoſe apparent right aſcenſion is known, paſſes the meridian, compare its right aſcenſion with the right aſcenſion ſhown by the clock, and the difference will ſhow the error of the clock. For inſtance, let the apparent right aſcenſion of *aldebaran* be 4h. 23'. 50". when it paſſes over the meridian, and at that time ſuppoſe the clock to ſhow 4h. 23'. 56", then the clock is at that time 6" too faſt; and by thus continually comparing the clock with ſtars whoſe right aſcenſions are known, you will always have the error of the clock; and you will alſo ſee at what rate it gains or loſes, called the *rate of its going*. The error of the clock, and the rate of its going being thus aſcertained, if the time of the tranſit of any body be obſerved, and the error of the clock be applied, you will have the right aſcenſion of the body.

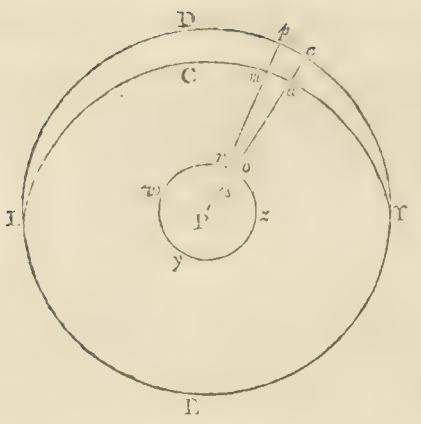
76. Thus we determine the declination *ms*, and right aſcenſion *Am*, of any heavenly body *s*; and from theſe we can, by ſpherical trigonometry, find the latitude *ns* and the longitude *An* (ſee fig. page 8); and it is manifeſt, that if we know theſe two quantities, we ſhall alſo know the place *s* of the body; and it is frequently more uſeful to make uſe of the latitude and longitude, than it is the declination and right aſcenſion, for finding the place of a body; it is neceſſary therefore, in ſuch caſes, to compute the latitude and longitude from the right aſcenſion and declination; for the method of doing which we refer the reader to the above-mentioned work.

77. Being thus able to find the ſituation of a body in the heavens, we can every day determine the place of all the heavenly bodies which have any motions, and thus we find out the paths which they deſcribe, and how faſt they move.

On the Equation of Time.

78. The beſt meaſure of time which we have, is a clock regulated by the vibration of a pendulum. But with whatever accuracy a clock may be made, it muſt be ſubject to go irregularly, partly from the imperfection of the workmanſhip, and partly from the expanſion and contraction of the materials by heat and cold, by which the length of the pendulum, and conſequently the time of a vibration, will vary. As no clock therefore can be depended upon for keeping time accurately, it is neceſſary that we ſhould be able at any time to aſcertain how much it is too faſt or too ſlow, and at what rate it gains or loſes. For this purpoſe, it muſt be compared with ſome motion which is uniform, or of which, if it be not uniform, you can find the variation. The motions of the heavenly bodies have therefore been conſidered as moſt proper for this purpoſe. Now as the earth revolves uniformly about its axis, the apparent diurnal motion of all the heavenly bodies about the axis muſt be uniform. If a clock therefore be adjuſted to go 24 hours from the paſſage of any fixed ſtar over the meridian till it returns to it again, its rate of going may be determined by comparing it with the tranſit of any fixed ſtar, and obſerving whether the interval continues to be 24 hours; if not, the difference ſhows how much it gains or loſes in that time. A clock thus adjuſted is ſaid to be adjuſted to *ſidereal* time; and all the ſidereal days are equal. But all the *ſolar* days are not equal, that is, the intervals from the ſun's leaving the meridian till it returns to it, are not all equal, ſo that if a clock be adjuſted to go 24 hours in one interval, another interval will be performed in more or leſs than 24 hours, and thus the ſun and the clock will not agree, that is, the clock will not continue to ſhow 12 when the ſun comes to the meridian.

79. For let *P* repreſent the pole of the earth, *vwyz* its equator, and ſuppoſe the earth to revolve about its axis, in the order of the letters *vwyz*; and let *ϒDLE* be the celeſtial equator, and *ϒCL* the ecliptic, in which the ſun moves according to that direction.



Let *s* be the place of a ſpectator, and draw the meridian *Psvae*, and let us ſuppoſe the ſun to be at *a* on the meridian. Then when the earth has made one revolution about its axis, the ſpectator at *s* will come again into the ſame ſituation, and be again on the ſame meridian *Psvae;* but the ſun is not now again on the meridian, becauſe he has moved forward in the ecliptic towards *L;* if therefore *m* be the point where the ſun is when he next comes to the meridian, or rather when the meridian overtakes him, and you draw the meridian *Prmp*, then the earth, after it has made a revolution about its axis, has deſcribed the angle *vPr* before the ſpectator at *s* be brought again into the meridian *Pmp* of the ſun. Now the angle *vpr* is meaſured by the arc *pe*, which is the increaſe of the ſun's right aſcenſion in the time he moves from *a* to *m*, or in a *true* ſolar day; hence, the length of a *true* ſolar day is *equal to the time of the earth's rotation about its axis, together with the time of deſcribing an angle equal to the increaſe of the ſun's right aſcenſion in a true ſolar day.* Now if the ſun moved uniformly, and alſo in the equator ϒ*DLE*, this increaſe *ep* would be always the ſame in the ſame time, and therefore the ſolar days would be all equal; but the ſun moves in the ecliptic ϒ*CL*, and therefore *if* its motion were *uniform*, equal arcs (*am*) upon the ecliptic would not give equal arcs (*ep*) upon the equator. But the motion of the ſun in the ecliptic is *not* uniform, and hence alſo *am*, deſcribed in a given time, is ſubject to a variation, and conſequently *ep* is ſubject to a variation. Hence, the increaſe *ep* of the ſun's right aſcenſion in a *true* ſolar day, varies from two cauſes; 1ſt. Becauſe the ecliptic, in which the ſun moves, is inclined to the equator; 2d. Becauſe his motion in the ecliptic is not uniform; therefore the length of a *true* ſolar day is ſubject to a continual variation; conſequently a clock which is adjuſted to go 24 hours for any one true ſolar day, will not continue to ſhow 12 when the ſun comes to the meridian; becauſe the intervals by the clock will continue equal (the clock being ſuppoſed neither to gain or loſe), but the intervals of the ſun's paſſage over the meridian are not equal.

80. As the ſun moves through 360° of right aſcenſion in 365¼ days, therefore 365¼ days: 1 day :: 360°: 59′. 8″,2 the increaſe of right aſcenſion in 1 day, *if* the increaſe were uniform, or it would be the increaſe in a *mean* ſolar day, that is, if the ſolar days were all equal; for they would be all equal, if the ſun's right aſcenſion increaſed uniformly, as appears by the laſt article.* If therefore a clock be adjuſted to go 24 hours in a *mean* ſolar day, it will not continue to coincide with the ſun, that is, to ſhow 12 when the ſun comes to the meridian, becauſe the *true* ſolar days differ in length from a *mean* ſolar day, but the ſun will paſs the meridian, ſometimes *before* 12, and ſometimes *after* 12, and this difference is called the *equation of time.* A clock thus adjuſted, is ſaid to be adjuſted to *mean* ſolar time. The time ſhown by the clock is called *true* or *mean* time; and that ſhown by the ſun is called *apparent* time; thus, when the ſun comes to the meridian, it is ſaid to be 12 o'clock, *apparent* time. Hence, the time ſhown by a ſun-dial is *apparent* time, and therefore a dial will differ from a clock, by how much the equation of time is on that day. When therefore you ſet a watch by the dial, you muſt ſee what the equation of time is upon that day, and allow for it; for inſtance, if the equation be 3 minutes, and the watch be faſter than the ſun, then you muſt ſet your watch 3 minutes before the time ſhown by the dial. Now aſtronomers, when they compute tables of the equation of time for every day of the year, ſet the ſun and clock together, when the ſun is at his apogee, and then they calculate what is the difference between the ſun and the clock, for every day at noon, and inſert them in a table, ſtating how much the clock is before or after the ſun. For the methods of making theſe calculations, we muſt refer the reader to the Treatiſe beforementioned. The inclination of the equator to the ecliptic, upon which the equation of time partly depends, and the place of the ſun's apogee, when the clock and ſun ſet off together, being both ſubject to vary, the equation of time for the ſame days of the year, will every year vary, and therefore it muſt be calculated every year. Beſides the time when the ſun is in his apogee, there are three other times of the year when the clock and ſun agree, or when *mean* and *apparent* times are the ſame.

81. Whenever it is required to make any calculations from aſtronomical tables, and the time given is *apparent* time, the equation of time muſt be applied in order to convert it into *mean* time, and for that time the computations muſt be made, becauſe all tables are conſtructed for *mean* motions. Thus, if it were required to find

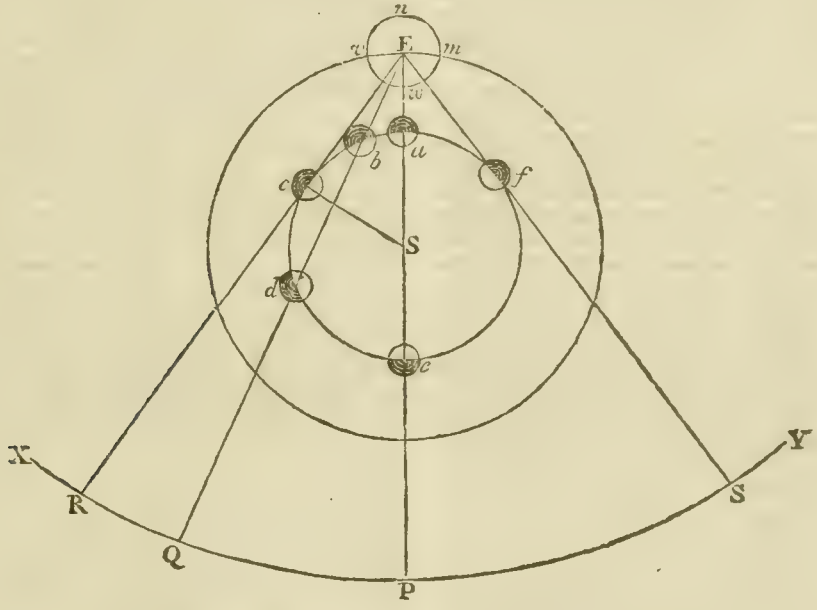
* As the earth deſcribes an angle of 360°. 59′. 8″,2 about its axis in a *mean* ſolar day of 24 hours, and an angle of 360° in a *ſidereal* day, therefore 360°. 59′. 8″,2 : 360° :: 24h. : 23h. 56′. 4″,09 the length of a ſidereal day in *mean* ſolar time, or the time from the paſſage of a fixed ſtar over the meridian till it returns to it again.

the

the ſun's place on any day at *apparent* noon, the equation of time muſt be applied to 12 o'clock, and then the ſun's place muſt be computed from the tables for that time. All the articles in the *Nautical Almanac*, anſwering to noon, are computed in this manner.

On the Solar Syſtem.

82. The ſun is placed in the center of the ſyſtem, about which the planets revolve in the following order, reckoning from the ſun: *mercury*, *venus*, the *earth*, *mars*, *jupiter*, *ſaturn*, and the *georgian*; theſe are ſometimes called *primary* planets. Some of theſe planets have bodies revolving about them; the earth has one; jupiter has four; ſaturn has ſeven; and the georgian has ſix; theſe are called *ſecondary* planets, *ſatellites*, or *moons*. There are alſo other bodies which revolve about the ſun, called *Comets*, which move in orbits very elliptical, and extend to a very great diſtance beyond the orbits of the primary planets. The ſun, the primary planets, the ſecondary planets, and the comets, compoſe what is called the *Solar Syſtem*. The two planets which are nearer to the ſun than the earth is, are called *inferior* planets; and the other five which are further from the ſun than the earth is, are called *ſuperior* planets. All the other bodies in the heavens are fixed ſtars, and at ſuch immenſe diſtances beyond the ſolar ſyſtem, that their apparent relative ſituations are not at all altered by the motion of the earth in its orbit; we may therefore conſider them as placed in the concave ſurface of a ſphere, having the earth for its center; and to theſe we refer the motions of the bodies in our ſyſtem. The orbits of the primary planets are ellipſes, having the ſun in one of the foci; but they are ſo very nearly circles, that, for our preſent purpoſe, we may conſider them as circles having the ſun in the center.



82. Let *S* be the ſun, *E* the earth, *abcdef* the orbit of one of the *inferior* planets, *venus* or *mercury*; *XY* the ſphere of the fixed ſtars; draw *EaSeP*, *EbdQ*, and let *EcR*, *EfS* be tangents to the orbit of the planet, and let *a*, *b*, *c*, *d*, *e*, *f*, be ſo many different ſituations of the planet; then as the planets are opaque bodies, that half which is next to the ſun is enlightened, and the other half is dark, as repreſented in the figure. The ſituation *a* is called *inferior* conjunction, and the ſituation *e* is called *ſuperior* conjunction. Now it is manifeſt, that at *a*, the dark part only of the planet is towards the earth, and therefore the planet is then inviſible; at *b*, a part of the enlightened face is towards the earth, and therefore part of the planet will be viſible, and will look like the moon before it comes to its firſt quarter; at *c*, one half of the enlightened part of the planet will be turned towards the earth, and it will look like the moon at its firſt quarter; at *d*, more than half the enlightened part of the planet will be towards the earth, and it will look like the moon between its ſecond quarter and full; at *e*, the whole enlightened part of the planet will be next the earth, and the planet will appear to ſhine with a full face, like the moon at its full; and from *e* through *f* to *a*, the appearances will be the ſame in the contrary order. Theſe are the *phænomena* which an inferior planet muſt have; and as, by viewing *venus* and *mercury* with a

teleſcope, they are found to have all theſe phænomena, we conclude that they muſt be inferior planets. Now the angle *cES* is the greateſt diſtance at which theſe planets appear from the ſun, or the greateſt elongation; and as this angle is found to be greater for *venus* than it is for *mercury*, we know that *mercury* is nearer to the *ſun* than *venus*.

84. When the planet is at *a*, it appears in the heavens amongſt the fixed ſtars at *P*; when it is at *b*, it appears at ♎; when it is at *c* it appears at *R*; when it is at *d*, it appears at ♎; when it is at *e*, it appears at *P*; when it is at *f*, it appears at *S*; and when it returns to *a*, it appears at *P*; at which place alſo the ſun appears. It is manifeſt therefore, that an inferior planet appears to move backwards and forwards in the heavens, from *S* to *R*, and from *R* to *S*; and therefore there muſt be two points where the planet appears ſtationary; for if a planet firſt appear to move one way and then back again in a contrary direction, the motion muſt firſt ceaſe in one direction before it takes place in a contrary direction. We have here ſuppoſed the earth to be at reſt at *E*, but all the ſame phænomena will take place if we ſuppoſe the earth to be in motion; for an inferior planet moves faſter about the ſun than the earth does, and therefore when it comes into inferior conjunction at *a*, it will immediately leave the earth behind it, and have the ſame relative ſituations in reſpect to the earth and ſun, as we have deſcribed above. If the earth were at reſt, the two ſtationary points would be at *R* and *S*, when the planet was on each ſide at its greateſt elongation from the ſun (appearing at P); but as the earth is in motion, theſe will not be the ſtationary points. The true ſtationary points (which call P and *S*) are determined, by finding when a line joining the earth and planet continues parallel to itſelf for a very ſmall time.

85. The earth and all the planets revolve about the ſun in the direction *XY*; that direction is therefore *direct*, and the contrary direction *YX* is *retrograde* (ſee art. 19.). Hence, an inferior planet appears to move direct, from the ſtationary point *R* before it comes to the ſuperior conjunction, till it comes to the ſtationary point *S* after; and it appears to move retrograde, from the ſtationary point *S* before it comes to the inferior conjunction, till it comes to the ſtationary point *R* after; therefore whilſt an inferior planet is paſſing through its inferior conjunction, it is retrograde; and whilſt it is paſſing through its ſuperior conjunction, its motion is direct. As the arc *cef* is greater than the arc *fac*, the planet is longer direct than it is retrograde. It appears alſo from hence, that the two inferior planets will conſtantly attend the ſun, receding to a certain diſtance on each ſide, and then returning to again to him. As the orbits of the planets are not circles, but ellipſes, the greateſt elongations of *venus* and *mercury* are not always the ſame; the greateſt elongations of *venus* are from 44°. 57′ to 47°. 48′; and of *mercury* from 17°. 36′ to 28°. 20′. As *mercury* recedes but to a ſmall diſtance from the ſun, it is not often that it can be ſeen, as it muſt be in the moſt favourable ſituation for that purpoſe, and the atmoſphere muſt alſo be very clear at the ſame time.

86. When *venus* is at the diſtance of 39°. 44′ from the ſun, between its inferior conjunction and its greateſt elongation, ſhe then gives the greateſt quantity of light to the earth; and at that time her brightneſs is ſo great as to cauſe a ſhadow. And if at that time ſhe be at her greateſt north latitude, her brightneſs is ſo great that ſhe is ſeen by the naked eye at any time of the day when ſhe is above the horizon; for when her north latitude is the greateſt, ſhe riſes higheſt above the horizon, and her rays coming through leſs of the atmoſphere, ſhe is more eaſily ſeen. This happens once in about 8 years, *venus* and the *earth* returning very nearly to the ſame parts of their orbits after that interval of time.

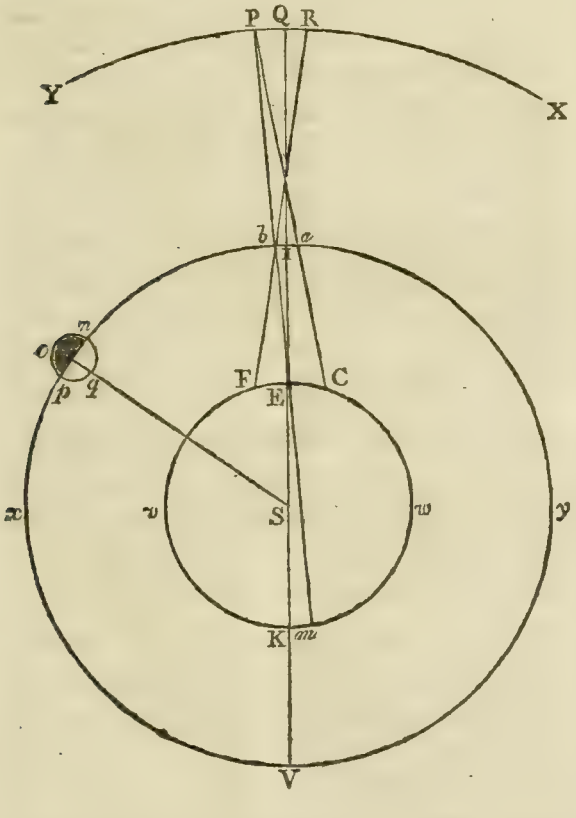
87. *Venus* is a *morning* ſtar from inferior to ſuperior conjunction, and an *evening* ſtar from ſuperior to inferior conjunction. The earth turns about her axis according to the order of the letters *mnvw*; when the ſpectator is at *n*, it is then night to him; and as, by the earth's rotation, he is carried towards *v*, it is manifeſt that the part *ace* of the orbit of venus will come into view before the ſun *S* does; hence, if venus be any where in that part of her orbit, ſhe will appear in the morning before ſun-riſe, and therefore ſhe is then a *morning* ſtar. As the ſpectator paſſes through *vwm*, it is day, and at *m* the ſun will ſet; but the part *efa* of the orbit of venus will ſtill be above his horizon, and therefore if venus be in that part, ſhe will be viſible after ſun-ſet, and will then be an *evening* ſtar.

88. The orbits of *venus* and *mercury* are inclined to the orbit of the earth, and cut it at two oppoſite points, called the *nodes*, ſo that if we conceive the orbit of the earth to lie in the plane of the paper, the orbits of venus and mercury will lie, one half above the paper, and the other half below. It is upon this account that venus and mercury, when they come into their inferior conjunction, at *a*, do not always appear to paſs over the ſun's diſc, or make a tranſit over it. If the nodes happen to lie in conjunction and oppoſition, then, when the planet comes into conjunction at *a*, it is in a line joining the earth and ſun, and it will appear to paſs over the diſc of the ſun, like a ſmall, round, black ſpot. But if the nodes be at a certain diſtance from conjunction and oppoſition, when the planet comes into conjunction, it may be ſo far above or below the line joining the earth and ſun, as not to paſs over the ſun. The tranſits of *venus* do not happen ſo often as thoſe of *mercury*. The laſt tranſit of venus happened in 1769, and the next will be in 1874. The laſt tranſit of mercury happened in 1799, and the next will be in 1802.

89. When Dr. Halley was at St. *Helena*, whither he went for the purpoſe of making a catalogue of the ſouthern ſtars, he obſerved a tranſit of mercury over the ſun's diſc, and this ſuggeſted to him a method of finding the ſun's parallax from ſuch obſervations, from the difference of the times of tranſit over the ſun, at different places upon the earth's ſurface. But the difference of the

the times being leſs for mercury than for venus, the concluſions will be more accurate for venus than for mercury. The Doctor therefore propoſed to determine the parallax of the ſun from the tranſit of venus; and as it was not probable that he himſelf ſhould live to obſerve the two next tranſits, which happened in 1761 and 1769, he very earneſtly recommended the attention of them to the aſtronomers who might then be alive. Aſtronomers were therefore ſent from *England* and *France* to the moſt proper parts of the earth, to obſerve both theſe tranſits; from which obſervations it appears, that the horizontal parallax of the ſun at his mean diſtance, is $8\frac{1}{4}''$; hence, by article 14, ſin $8\frac{1}{4}''$: rad. :: rad. of earth : mean diſtance of the ſun from the earth; now ſin. $8\frac{1}{4}''$: rad. :: 1 : 23575; therefore the mean diſtance of the ſun from the earth is equal to 23575 ſemidiameters of the earth; and as we have determined (ſee art. 4) the radius of the earth to be 3965 miles, the mean diſtance of the earth from the ſun $=23575\times3965=$ 93474875 miles. For the method of finding the horizontal parallax, we refer the reader to the Treatiſe of Aſtronomy which we have before mentioned.

90. Having deſcribed the phænomena attending the inferior planets, we proceed to deſcribe thoſe which attend the ſuperior.



91. Let *S* be the ſun, *E* the earth, *EvKw* the orbit of the earth, *InVy* the orbit of a ſuperior planet, *XY* the ſphere of the fixed ſtars; draw *VKSEIQ*, *CaP*, *FbR*, *mbP*; then when the planet is at *I*, it is in *oppoſition* to the ſun, and at *K*, it is in *conjunction*. Now the earth moves faſter than a ſuperior planet; whilſt the earth therefore moves from *C* to *E*, and from *E* to *F*, let the planet deſcribe the ſmaller arcs *aI*, *Ib*. Then it is manifeſt, that when the earth is at *C*, the planet at *a* appears in the heavens at *P*; when the earth is at *E*, the planet at *I* appears at *Q*; and when the earth is at *F*, the planet at *b* appears at *R*; whilſt therefore the earth moves from *C* to *F*, the planet appears to move from *P* to *R*, contrary to its real motion; hence, a ſuperior planet is *retrograde* whilſt it paſſes through *oppoſition*. Suppoſe now that when the earth is at *K* the planet is at *I* in conjunction with the ſun, and let the earth move from *K* to *m* whilſt the planet moves from *I* to *b*, then it will appear in the heavens to have moved from *Q* to *P*, or according to its real motion. Hence, a ſuperior planet is *direct* when it paſſes through *conjunction*. As therefore a ſuperior planet appears to move, ſometimes direct and ſometimes retrograde, it muſt appear ſtationary at the two points where the motion changes from one to the other.

92. When the planet is in oppoſition at *I*, or in conjunction at *K*, the earth being at *E*, it is manifeſt that the ſame face of the planet which is towards the ſun, is alſo towards the earth, and therefore the planet appears full orbed; but if *nopq* be the poſition of the planet, then the ſpectator on the earth at *E* will have a little of the dark part of the planet beyond *n* turned towards him, and therefore it will not be full orbed to the earth, but will appear like the moon a little before or after its full. But if the planet be at a very great diſtance from the ſun, when compared with the earth's diſtance, there will be ſo little of the dark part turned towards the earth, that it will, as to ſenſe, appear full orbed. Now this is the caſe with all the ſuperior planets, except *mars*, which between conjunction and oppoſition is obſerved to appear not full orbed; but all the reſt do, on account of their great diſtances.

93. It is found by obſervation, that the places of the aphelia of the orbits of the planets, and the places of their nodes, have a motion, and that the inclinations of their orbits to the ecliptic are ſubject to a variation. Theſe circumſtances ariſe from the mutual attractions of the planets.

94. It appears, from what we have already obſerved, that *mercury*, *venus*, and *mars* are opaque bodies, as they do not always ſhine with full faces, that part towards the earth which is not towards the ſun, being dark. *Jupiter* and *ſaturn* caſt ſhadows, and eclipſe their ſatellites, and therefore they muſt be opaque bodies. The *georgian* has never been ſeen to eclipſe its ſatellites, as the ſatellites have not, ſince the diſcovery of the planet, been in a ſituation to be eclipſed by the planet; but it being a body revolving about the ſun, like the other planets, and having alſo ſatellites revolving about it, we may conclude by analogy, that it is an opaque body.

95. KEPLER made three very important diſcoveries

reſpecting the motions of the planets, and which are indeed the foundation of all aſtronomy.

1ſt. That the primary planets revolve about the ſun in ellipſes, having the ſun in one of the foci. 2dly. That the ſquares of the periodic times of all the planets, have the ſame proportion to each other as the cubes of their reſpective mean diſtances. 3dly. That if a line be drawn from the ſun to a planet, and move as the planet moves, it will deſcribe about the ſun, equal areas in equal times. Theſe principles which KEPLER deduced from obſervation, SIR I. NEWTON proved to be true from the common principles of motion, and his theory of gravity.

96. The periodic time of the earth, or the time in which the earth makes a complete revolution in her orbit, called a *ſidereal* revolution, it 365d. 6h. 9′. 11″,5. The time from the earth's leaving the firſt point of aries till ſhe returns to it, is 365d. 5h. 48′. 48″, and this is called a *tropical* revolution; and this being leſs than her periodic time, it follows that the equinoctial points move backwards; and this motion is called the *preceſſion of the equinoxes*. The time from the earth's leaving her apogee till ſhe returns to it, is 365d. 6h. 14′. 2″; and this being greater than her periodic time, it follows that her apogee moves forward; this is called her *anomaliſtic* year.

97. The following table contains the relative *mean* diſtances of the planets from the ſun, aſſuming the mean diſtance of the earth to be *unity*; together with their periodic times.

Planets	Mean Diſt.	Periodic Times
Mercury	0,38710	87d. 23h. 15′. 43″,6
Venus	0,72333	224d. 16h. 49. 10,6
Earth	1,00000	365d. 6h. 9. 11,6
Mars	1,52369	1y. 321d. 23h. 30. 35,6
Jupiter	5,20279	11y. 315d. 14h 27. 10,8
Saturn	9,54072	29y. 174d. 1h. 51. 11,2
Georgian	19,18352	83y. 150d. 18h.

98. A table of the places of the aphelia of the orbits for the beginning of 1750, with their motions in longitude in 100 years.

Planets	Place of Aphelia				Mot. in 100 years		
Mercury	8.	13°.	33′.	58″	1°.	33′.	45′
Venus	10.	7.	46.	42	1.	21.	0
Earth	3.	8.	37.	16	1.	43.	35
Mars	5.	1.	28.	14	1.	51.	40
Jupiter	6.	10.	21.	4	1.	34.	33
Saturn	8.	28.	9.	7	1.	50.	7
Georgian	11.	16.	19,	30	1.	29.	2

99. A table of the places of the *aſcending* nodes of the orbits of the planets for 1750, with their motions in longitude for 100 years.

Planets	Place of the Node				Mot. of Node		
Mercury	1s.	15°.	20′.	43″	1°.	12′.	10″
Venus	2.	14.	26.	18	0.	51.	40
Mars	1.	17.	38.	38	0.	46.	40
Jupiter	3.	7.	55.	32	0.	59.	30
Saturn	3.	21.	32.	22	0.	55.	30

M. DE LA PLACE found the place of the node of the *Georgian* planet in 1788, to be 2°. 12′. 47″; but its motion is not yet determined.

100. A table of the inclinations of the orbits of the planets to the ecliptic for the year 1788; with the variation for 100 years.

Planets	Inclination			Variation
Mercury	7°.	0′.	0″	+20″,43
Venus	3.	23.	35	+4,17
Mars	1.	51.	0	+3,45
Jupiter	1.	18.	56	—27,19
Saturn	2.	29.	50	—23,11
Georgian	0.	46.	20	

The variation is that ariſing from theory, as determined by M. DE LA GRANGE. The ſign +, ſhows that the inclination increaſes, and the ſign —, that it decreaſes.

101. If two planets revolve in circular orbits, to find the time from conjunction to conjunction. Let P = the periodic time of a ſuperior planet, p = the periodic time of an inferior planet, t = the time required. Then P : 1 day :: 360° : $\frac{360°}{P}$ the angle deſcribed by the ſuperior planet in 1 day; for the ſame reaſon, $\frac{360°}{p}$ is the angle deſcribed by the inferior planet in 1 day; therefore $\frac{360°}{p} - \frac{360°}{P}$ is the daily angular velocity of the inferior planet *from* the ſuperior, or how much the former recedes from the latter, every day. Now if they ſet out from conjunction, they will return into conjunction again, after the inferior planet has gained one revolution, or 360°; therefore $\frac{360°}{p} - \frac{360°}{P}$: 360° :: 1 day : $t = \frac{Pp}{P-p}$. The rule therefore to find the required time, is, *to multiply the periodic times together, and divide by their difference.* This will alſo give the time between two oppoſitions, or between any two ſimilar ſituations. The time from conjunction to conjunction is called a *ſynodic* revolution.

On

On the Motion of the Moon, and its Phænomena.

102. The moon being the neareſt, and, next to the ſun, the moſt remarkable body in our ſyſtem, and alſo uſeful for the diviſion of time, it is no wonder that the ancient aſtronomers were attentive to diſcover its motions, and the orbit which it deſcribes. The motion of the moon in its orbit about the earth, is from weſt to eaſt, and its orbit is found to be inclined to the ecliptic. The motion of the moon is alſo obſerved not to be uniform, and its diſtance from the earth is found to vary, which ſhows that it does not revolve in a circle about the earth in its center; but its motion is found to be in an ellipſe, having the earth in one of the foci. The poſition of the ellipſe is obſerved to be continually changing, the major axis not being fixed, but moving ſometimes direct and ſometimes retrograde; but, upon the whole, the motion is direct; and it makes a complete revolution in a little more than 8½ years. The excentricity of the ellipſe is alſo found to change, that is, the ellipſe is ſometimes nearer to a circle than it is at other times. The inclination of its orbit is found likewiſe ſubject to a variation from 5° to 5°. 18′. All theſe irregularities ariſe from the ſun diſturbing the moon's motion by its attraction.

103. As the ellipſe which the moon deſcribes about the ſun, is ſubject to a variation, the periodic time of the moon about the earth will alſo vary; in winter, the moon's orbit is dilated, and the periodic time is increaſed; and in ſummer, her orbit is contracted, and her periodic time is diminiſhed. The periodic time of the moon increaſes whilſt the ſun is moving from his apogee to his perigee, and decreaſes whilſt he moves from his perigee to his apogee; and the greateſt difference of the periodic times is found to be about 22½ minutes.

104. The *mean* periodic time of the moon is 27d. 7h. 43′. 11″,5; this is called her ſidereal revolution, being the *mean* time from her leaving any fixed ſtar, till her return to it again. Now it is found by obſervation, that the *mean* time from her leaving her apogee till ſhe returns to it, is 27d. 13h. 18′. 4″; hence, the moon is longer in returning to her apogee than ſhe is in making a revolution in her orbit, and therefore her apogee muſt move forward. The *mean* time from her leaving her node till ſhe returns to it again, is 27d. 5h. 5′. 35″,6, and this being leſs than her *mean* periodic time, it follows that ſhe returns to her node before ſhe has completed her revolution, and therefore her nodes muſt have a retrograde motion.

105. The time between two *mean* conjuctions of the ſun and moon, or from new moon to new moon, ſuppoſing their motions had both been uniform, is found by the rule in article 101; taking therefore the mean periodic time of the moon and ſun as already ſtated, we get the *mean* time from conjunction to conjunction to be 29d. 12h. 44′. 2″,8, and this is called her *ſynodic* revolution. The *true* time from new to new moon will be ſometimes greater and ſometimes leſs than this. The cauſes of all theſe irregularites we will briefly explain.

106. The apparent diameter of the moon is found continually to vary; now the apparent diameter of any very diſtant body, varies inverſely as its diſtance. Hence, as the apparent diameter of the moon increaſes, ſhe muſt approach the earth; and when it decreaſes, ſhe muſt recede from the earth. This variation of her apparent diameter agrees exactly with what ought to be the caſe, if the moon moved in an ellipſe about the earth in one of its foci; we conclude therefore that the moon moves in an ellipſe about the earth ſituated in one of its foci, as no other ſuppoſition will agree with the obſerved variation of the moon's diameter. From the variation of the ſun's diameter, it appears in like manner, that the earth muſt revolve in an ellipſe about the ſun, having the ſun in one of the foci.

107. The earth moving in an ellipſe about the ſun in its focus, the nearer the earth comes to the ſun, the more it is attracted by him, and this attraction increaſes in the ſame ratio as the ſquare of the diſtance diminiſhes; and on the contrary, it decreaſes as the ſquare of the diſtance increaſes. As therefore the earth approaches the ſun all the time it moves from the aphelion to the perihelion, the attraction increaſes, and conſpiring partly with the earth's motion, it accelerates the motion of the earth; and when the earth moves from perihelion to aphelion, the attraction acts partly againſt the earth's motion, and diminiſhes its motion. Thus, the velocity of the earth increaſes whilſt it moves from the aphelion to perihelion, and decreaſes as much whilſt it moves from perihelion to aphelion. As the moon moves in an ellipſe about the earth in its focus, ſhe muſt, in like manner by the earth's attraction, have her velocity increaſed from her apogee to perigee, and decreaſed as much from her perigee to apogee. Theſe are the principal cauſes of the variation of the velocities of the earth and moon. But as the ſun attracts the moon, as well as the earth attracts it, the attraction of the ſun will cauſe another variation of the moon's velocity. Thus the moon being attracted both by the ſun and earth, they will cauſe great irregularities in her motion; and hence it is very difficult to compute the place of the moon. After finding the *mean* place of the moon, that is, the place where ſhe would have been if her motion had been uniform, it requires not leſs than 20 corrections, in order to get the true place to a ſufficient degree of accuracy. Sir I. Newton was the firſt perſon who pointed out the ſources of theſe irregularities; but they are of a nature too difficult to admit of a popular illuſtration.

108. When we view the moon with a telescope, we find that her ſurface is very rough with mountains and cavities; this appears from the very jagged boundary of the light and dark parts. Alſo, certain parts are found to project ſhadows always oppoſite to the ſun: and when the ſun becomes vertical to any of them, they are obſerved to have no ſhadow: theſe therefore muſt be mountains. Other parts are always dark on that ſide next the ſun, and illuminated on the oppoſite ſide; theſe therefore muſt be cavities. Hence, the appearance of the moon conſtantly varies, from its altering its ſituation in reſpect to the ſun. The tops of the mountains on the

dark part of the moon, are frequently ſeen enlightened at a diſtance from the confines of the illuminated part. The dark parts have, by ſome, been thought ſeas; and by others, to be only a great number of caverns and pits, the dark ſides of which next to the ſun, would cauſe thoſe places to appear darker than the reſt. The great irregularity of the line bounding the light and dark parts, on every part of the ſurface, proves that there can be no very large tracts of water, as ſuch a regular ſurface would neceſſarily produce a line, terminating the bright part, perfectly free from all irregularity. Alſo, if there was much water upon its ſurface, and an atmoſphere, as conjectured by ſome aſtronomers, the clouds and vapours might eaſily be diſcovered by our teleſcopes; but no ſuch phænomena have ever been obſerved.

109. On April 9, 1787, Dr. Herschel diſcovered three volcanoes in the dark part of the moon; two of them ſeemed to be almoſt extinct, but the third ſhowed an actual eruption of fire, or luminous matter, reſembling a ſmall piece of burning charcoal covered by a thin coat of white aſhes; it had a degree of brightneſs about it, as ſtrong as that with which ſuch a coal would be ſeen to glow in faint day light. The adjacent parts of the volcanic mountain ſeemed faintly illuminated by the eruption. A ſimilar eruption appeared on May 4, 1783. On March 7, 1794, a few minutes before 8 o'clock in the evening, Mr. Wilkins of Norwich, an eminent architect, obſerved, with the naked eye, a very bright ſpot upon the dark part of the moon; it was there when he firſt looked at the moon; and the whole time he ſaw it, which was about 5 minutes, it was a fixed, ſteady light, except the moment before it diſappeared, when its brightneſs increaſed. The ſame phænomenon was alſo obſerved by Mr. T. Stretton, in St. John's-ſquare, Clerkenwell, *London*. On April 13, 1793, M. Piazzi, Aſtronomer-Royal, at *Palermo*, obſerved a bright ſpot on the dark part of the moon; and ſeveral other aſtronomers have obſerved the ſame phænomenon.

110. It has been a doubt amongſt aſtronomers, whether the moon has any atmoſphere; ſome ſuſpecting that at an occultation of a fixed ſtar by the moon, the ſtar did not vaniſh ſuddenly, but loſt its light gradually, and thence concluded, that the moon has an atmoſphere. M. Schroeter of *Lilienthan*, in the *Dutchy of Bremen*, has endeavoured to eſtabliſh the exiſtence of an atmoſphere, from the following obſervations. 1. He obſerved the moon when $2\frac{1}{2}$ days old, in the evening ſoon after ſun ſet, before the dark part was viſible; and continued to obſerve it till it became viſible. Two cuſps appeared tapering in a very ſharp, faint, prolongation, each exhibiting its fartheſt extremity faintly illuminated by the ſolar rays, before any part of the dark hemiſphere was viſible; ſoon after, the whole dark limb appeared illuminated. This prolongation of the cuſps beyond the ſemicircle, he thinks muſt ariſe from the ſun's rays being refracted by the moon's atmoſphere. He computes alſo the height of the atmoſphere, which refracts light enough into the dark hemiſphere to produce a twilight, more luminous than the light reflected from the earth when the moon is about 32° from the new, to be 1356 Paris feet; and that the greateſt height capable of refracting the ſolar rays is 5376 feet. 2dly. At an occultation of *jupiter's* ſatellites, the third diſappeared, after having been 1″ or 2″ of time indiſtinct; the fourth became indiſcernible near the limb; this was not obſerved of the other two. See the *Phil. Tranſ.* 1792.

111. Many aſtronomers have given maps of the moon; but the moſt celebrated are thoſe of Hevelius in his *Selenographia*; in which he has repreſented the appearance of the moon in its different ſtates from the new to the full, and from the full to the new; theſe figures Mayer prefers. Langrenus and Ricciolus denoted the ſpots upon the ſurface, by the names of philoſophers, mathematicians, and other celebrated men; giving the names of the moſt celebrated characters, to the largeſt ſpots. Hevelius marked them with the geographical names of places upon the earth. The former diſtinction is now generally uſed.

112. Very nearly the ſame face of the moon is always turned towards the earth, it being ſubject to only a ſmall change within certain limits, thoſe ſpots which lie near the edge appearing and diſappearing by turns; this is called its *Libration*. The moon turns about its axis in the ſame direction in which it revolves in its orbit. Now the angular velocity about its axis is uniform, and it turns about its axis in the ſame time in which it makes a complete revolution in its orbit; if therefore the angular motion about the earth were alſo uniform, the ſame face of the moon would always be turned towards the earth. For if the moon had no rotation on her axis, when ſhe is on oppoſite ſides of the earth ſhe would ſhow different faces; but if, after ſhe has made half a revolution in her orbit, ſhe has alſo turned half round her axis, then the face, which would otherwiſe have been ſhown, will be turned behind, and the ſame face will appear. And thus if the moon's angular velocity about her axis were always equal to her angular velocity in her orbit about the earth, the ſame ſide of the moon would be always towards the earth. But as the moon's angular velocity about her axis is uniform, and her angular velocity in her orbit is not uniform, their angular velocities cannot continue always equal, and therefore the moon will ſometimes ſhow a little more of her eaſtern parts, and ſometimes a little more of her weſtern parts; this is called a libration in *longitude*. Alſo, the moon's axis is not perpendicular to the plane of her orbit, and therefore at oppoſite points of her orbit, her oppoſite poles are turned towards the earth; therefore her poles appear, and diſappear, by turns; this called a libration in *latitude*.

113. Hence, nearly one half of the moon is never viſible at the earth, and therefore nearly one half of its inhabitants (if it have any) never ſaw the earth, and nearly the other half never loſe ſight of it. Alſo, the time of its rotation about its axis being a month, the length of the lunar days and nights will be about a fortnight each.

114. It is a very extraordinary circumſtance, that the time of the moon's revolution about her axis ſhould be equal to that in her orbit. Sir I. Newton, from the

the altitude of the tides upon the earth, has computed the altitude of the tides on the moon's ſurface to be 93 feet, and therefore the diameter of the moon perpendicular to a line joining the earth and moon, is leſs than the diameter directed to the earth, by 186 feet. Hence, ſays he, the ſame face muſt always be towards the earth, except a ſmall oſcillation; for if the longeſt diameter ſhould get a little out of that direction, it would be brought into it again, by the earth's attraction. The ſuppoſition of D. DE MAIRAN is, that the hemiſphere of the moon next the earth is more denſe than the oppoſite one, and hence, the ſame face would be kept towards the earth, upon the ſame principle as before.

115. When the moon is in conjunction with the ſun, ſhe is then ſaid to be *new*, and her dark ſide being next to the earth, ſhe is then inviſible. As ſhe recedes from the ſun, we firſt diſcover ſome of her bright part, and ſhe appears *horned* till ſhe gets 90° from the ſun, when ſhe appears half enlightened, or *dichotomiſed*; from thence, till ſhe comes into oppoſition, ſhe appears above half enlightened, or *gibbous*; and at oppoſition ſhe appears full orbed, the ſame face being then turned towards the earth which is towards the ſun, and ſhe is then ſaid to be at her *full*. And from oppoſition to conjunction, her apparent bright part decreaſes as it before increaſed.

116. When the moon is about three days from the new, the dark part is very viſible, by the light reflected from the earth, which is moon-light to the lunarians, conſidering our earth as a moon to them; and in the moſt favourable ſtate, ſome of the ſpots may be then ſeen. But when the moon gets into quadratures, its great light prevents the dark part from being ſeen. According to DR. SMITH, the ſtrength of moon-light at the full moon, is 90 thouſand times leſs than the light of the ſun; but from experiments made by M. BOUGUER, he concluded it to be 300 thouſand times leſs. The light of the moon, condenſed by the beſt mirrors, produces no ſenſible effect upon the thermometer. Our earth, in the courſe of a month, ſhows the ſame phaſes to the lunarians, as the moon does to us; the earth is at the full, at the time of the new moon, and at new, at the time of the full moon. The ſurface of the earth being about 13 times greater than that of the moon, it affords 13 times more light to the moon, than the moon does to us.

117. DR. HERSCHEL has meaſured the height of a great many of the lunar mountains, and finds that, a few excepted, they generally do not much exceed half a mile. Before he meaſured them, they were reckoned much higher, being generally overrated. He obſerves, that it ſhould be examined whether the mountain ſtands on level ground, which is neceſſary, that the meaſurement may be exact.

118. As the ſpectator is carried by the earth's rotation, his horizon will continually change its ſituation, and therefore it will continually cut the moon's orbit at different points till it has gone through the whole orbit; and the inclination of the orbit to the horizon will be continually changed. Now the difference between the times of the riſing of the moon on two ſucceſſive nights, will depend upon the angle which the moon's orbit makes with the horizon; the leſs the angle is, the leſs the moon will have deſcended below the horizon, at the time when the horizon is brought into the ſame ſituation it was 24 hours before; therefore when the angle which the moon's orbit makes with the horizon is the leaſt, there will be the leaſt difference of the times of her riſing. Now, that angle is the leaſt, when the firſt point of aries riſes, at which time, in the latitude of *London*, there is only about 17 minutes difference of the moon's riſing on two ſucceſſive nights. Now, about the 22d of September, the firſt point of aries riſes at the time the moon riſes, if the moon be then at the full, becauſe it will then be at the beginning of aries. In this caſe, therefore, the moon will riſe about the full for ſeveral nights, with but a ſmall difference of the times of her riſing. This happening in the time of harveſt, it is called the *harveſt* moon. As the full moon may not happen on the 22d of September, that which happens neareſt to it, is called the harveſt moon. The ſame ſmall difference of the times of riſing of the moon, happens every month, but it not happening at the full moon, and at that time of the year, it is not taken notice of. The greateſt difference of the times of the moon's riſing at *London* on two ſucceſſive nights, is about 1 hour and 17 minutes; and this happens when the moon is in the firſt point of libra, and therefore it happens at the *vernal* full moons.

119. There is a phænomenon called the *horizontal moon*, which is this, that it appears larger in the horizon than in the meridian; whereas, from its being farther from us in the former caſe than in the latter, it ſubtends a leſs angle when in the horizon. It is perhaps not eaſy to give a ſatisfactory anſwer to this deception. GASSENDUS thought that, as the moon was leſs bright in the horizon than in the meridian, we looked at it, in the former ſituation, with a greater pupil of the eye, and therefore it appeared larger. But this is not agreeable to the principles of optics, ſince the magnitude of the image upon the retina of the eye, does not depend upon the ſize of the pupil. DES CARTES thought that the moon appeared largeſt in the horizon, becauſe, when comparing its diſtance with the intermediate objects, it appeared then fartheſt off; and as we judge its diſtance greater in that ſituation, we, of courſe, think it larger, ſuppoſing that it ſubtends the ſame angle. DR. BERKLEY accounts for it thus: Faintneſs ſuggeſts the idea of greater diſtance; the moon appearing fainteſt in the horizon, ſuggeſts the idea of greater diſtance; and, ſuppoſing the angle the ſame, that muſt ſuggeſt the idea of a greater *tangible* object. He does not ſuppoſe the *viſible* extenſion to be greater, but that the idea of a greater *tangible* extenſion is ſuggeſted, by the alteration of the viſible extenſion. He ſays,—1ſt, That which ſuggeſts the idea of greater magnitude, muſt be ſomething perceived; for that which is not perceived can produce no effect. 2dly, It muſt be ſomething which is variable, becauſe the moon does not always appear of

the ſame magnitude in the horizon. 3dly, It cannot lie in the intermediate objects, they remaining the ſame; alſo, when theſe objects are excluded from ſight, it makes no alteration. 4thly, It cannot be the viſible magnitude, becauſe that is leaſt in the horizon. The cauſe therefore muſt lie in the viſible appearance, which proceeds from the greater paucity of rays coming to the eye, producing *faintneſs*. Mr. Rowning ſuppoſes that the moon appears fartheſt from us in the horizon, becauſe the portion of the ſky which we ſee, appears not an entire hemiſphere, but only a portion of one; and hence we judge the moon to be further from us in the horizon, and therefore larger. Dr. Smith, in his *Optics*, gives the ſame reaſon. The ſame circumſtances take place in the ſun. Alſo, if we take two ſtars near each other in the horizon, and two other ſtars near the zenith at the ſame angular diſtance, the two former will appear at a much greater diſtance from each other, than the two latter. On this account, people are, in general, much deceived in eſtimating the altitudes of the heavenly bodies above the horizon, judging them to be much greater than they are. The lower part of a rainbow alſo appears much wider than the upper part; and this may be conſidered as an argument that the phænomenon cannot depend entirely upon the greater degree of faintneſs of the object when in the horizon, becauſe the lower part of the bow frequently appears brighter than the upper part, at the ſame time that it appears broader. Alſo, faintneſs can have no effect upon the angular diſtance of the ſtars; and as the difference of the apparent diſtance of the two ſtars, whoſe angular diſtance is the ſame in the horizon and the zenith, ſeems to be fully ſufficient to account for the apparent variation of the moon's diameter in theſe ſituations, it may be doubtful whether the faintneſs of the object enters into any part of the cauſe.

120. The *mean* diſtance of the moon from the earth is about 239 thouſand miles; and her ſemidiameter is nearly $\frac{3}{1}\frac{3}{1}$ of the radius of the earth, or about 1081 miles. And as the magnitudes of ſpherical bodies are as the cubes of their radii, the magnitude of the moon : magnitude of the earth : : 3^3 : 11^3 :: 1 : 49 nearly.

On the Rotation of the Sun and Planets.

121. The times of rotation of the ſun and planets are determined by the ſpots which are obſerved upon their ſurfaces; either by finding the arc which is deſcribed in a given time by a ſpot, or by obſerving how long it is in paſſing over the whole diſc.

On the Rotation of the Sun.

122. It is doubtful by whom the ſpots on the ſun were firſt diſcovered. Scheiner obſerved them in May, 1611, and publiſhed an account of them in 1612. Galileo, in a publication in 1613, ſays, that being at *Rome*, in April 1611, he then ſhowed the ſpots on the ſun to ſeveral people, and that he had ſpoken of them ſome months before, to his friends at *Florence*. He imagined them to adhere to the ſun. Kepler ſays, they were obſerved by a ſon of David Fabricius, who publiſhed an account of them in 1611. In the papers of Harriot, not yet publiſhed, it is ſaid that ſpots upon the ſun were obſerved in *December*, 1610. From obſerving the motion of the ſpots, the time of the ſun's rotation is determined to be 25d. 14h. 8′.

123. Beſides the dark ſpots upon the ſun, there are alſo parts of the ſun, called *faculæ*, *lucidi*, &c. which are brighter than the general ſurface; theſe abound moſt in the neighbourhood of ſpots, or where ſpots have lately been. Moſt of the ſpots appear within 30° of the ſun's equator. On April 19, 1779, Dr. Herschel ſaw a ſpot whoſe diameter was 1′. 8″, which is equal in length to more than 31 thouſand miles; this was viſible to the naked eye.

On the Rotation of the Planets.

124. The *georgian* is at ſo great a diſtance, that aſtronomers have not been able to determine, whether it has any rotation about its axis.

125. *Saturn* was ſuſpected by Cassini and Fato, in 1683, to have a revolution about its axis; for they one day ſaw a bright ſtreak, which diſappeared the next, when another came into view near its diſc. Theſe ſtreaks are called *belts*. In 1719, when the ring diſappeared, Cassini ſaw its ſhadow upon the planet, and a belt on each ſide, parallel to the ſhadow. Dr. Herschel found that the arrangement of the belts always followed that of the ring. And during his obſervations on June 19, 20, and 21, 1780, he ſaw the ſame ſpot in three different ſituations; from all which he concluded that ſaturn revolved about an axis which is perpendicular to the plane of the ring. Another argument in ſupport of its rotation, is, that the planet is an oblate ſpheroid, having the diameter in the direction of the ring, to the diameter perpendicular to it, as 11 to 10, according to the Doctor. The truth of this conjecture he afterwards verified, having determined that ſaturn revolves about its axis in 10h. 16′.

126. *Jupiter* is obſerved to have belts, and alſo ſpots, by which the time of its rotation has been determined. From a ſpot which Cassini obſerved in 1665, he found the time of rotation to be 9h. 56′. From other ſpots in October 1691, he found the time 9h. 51′; and from other ſpots he determined the time to be 9h. 50′; and, in general, he found that the nearer the ſpots were to the equator, the quicker they revolved; from whence it is probable that the ſpots are not upon the body of jupiter, but in its atmoſphere. Dr. Herschel alſo found the time of rotation to vary, from different ſpots; and that the time of revolution of the ſame ſpot diminiſhed; and obſerves, that ſuch a circumſtance is agreeable to the theory of equinoctial winds, as it may be ſome time before the ſpot can acquire the velocity of the wind. Dr. Pound made the polar to the equatorial diameter as 12 : 13. Dr. Bradley made them as 12,5 : 13,5. Sir Isaac Newton made them as $9\frac{1}{2}$: $10\frac{1}{2}$ by

10″ by theory. The belts of jupiter are generally parallel to his equator, and are ſubject to great variations, both in reſpect to their number and figure; from which it is probable that they exiſt in the atmoſphere.

127. GALILEO diſcovered the phaſes of *mars*; after which ſome *Italians* ſaw a ſpot in 1636. But in 1666, DR. HOOK and M. CASSINI diſcovered ſome well defined ſpots, and the latter determined the time of rotation to be 24h. 40′. MARALDI made it 24h. 39′; and diſcovered a very bright part near the ſouthern pole; but the brightneſs is ſubject to ſome change. Something like this has been ſeen about the north pole. DR. HERSCHEL makes the time of rotation to be 24h. 39′. 21″,67. He alſo concludes, that mars has a conſiderable atmoſphere.

128. GALILEO firſt diſcovered the phaſes of *venus*, in 1611. In 1666, CASSINI, at the time when venus was dichotomiſed, diſcovered a bright ſpot upon it, at its ſtraight edge, and by obſerving its motion, he found the time of rotation to be 23h. 16′. M. SHROETER has endeavoured to ſhow that venus has an atmoſphere, from obſerving that the illuminated limb, when horned, exceeds a ſemicircle, as in the caſe of the moon; the cuſps ſometimes ran 15°. 19′ into the dark hemiſphere. He makes the time of rotation 23h. 21′; and concludes from his obſervations, that there are very high mountains upon the ſurface.

129. The phaſes of *mercury* are eaſily diſtinguiſhed, but no ſpots have yet been diſcovered, by which it can be aſcertained whether it has any rotation.

On the Rotation of the Satellites.

130. The *fifth* ſatellite of *ſaturn* was obſerved by M. CASSINI for ſeveral years as it went through the eaſtern part of its orbit, to appear leſs and leſs till it became inviſible; and in the weſtern part, to increaſe again. Theſe phænomena can hardly be accounted for, but by ſuppoſing ſome parts of the ſurface to be incapable of reflecting light, and therefore when ſuch parts are turned towards the earth, they appear to grow leſs, or to diſappear. And as the ſame circumſtances always returned again when the ſatellite returned to the ſame part of its orbit, it affords a ſtrong argument that the time of the rotation about its axis, is equal to the time of its revolution about its primary, a circumſtance ſimilar to the caſe of the moon. DR. HERSCHEL has diſcovered that all the ſatellites of *jupiter* have a rotation about their axes, of the ſame duration as their reſpective periodic times about their primary.

On the Satellites of Jupiter.

131. On January 8, 1610, GALILEO diſcovered the four ſatellites of jupiter, and called them *Medicean ſtars*, in honour of the family of the *Medici*, his patrons. This was a diſcovery of great importance, as it furniſhed a ready method of finding the longitude of places upon the earth's ſurface, by means of their eclipſes. The eclipſes led M. ROEMER to the diſcovery of the progreſſive motion of light; and hence DR. BRADLEY was enabled to ſolve an apparent motion of the fixed ſtars, which could not otherwiſe have been accounted for.

132. The ſatellites of jupiter in going from weſt to eaſt are eclipſed by the ſhadow of jupiter, and as they go from eaſt to weſt, they are obſerved to paſs over its diſc. Hence, they revolve about jupiter. The three firſt * ſatellites are always eclipſed when they are in oppoſition to the ſun, and the length of their eclipſes is found to vary; but ſometimes the fourth ſatellite paſſes through oppoſition without being eclipſed. Hence it appears, that the planes of their orbits do not coincide with the plane of jupiter's orbit; for in that caſe, they would always paſs through the center of his ſhadow, and be always equally eclipſed at every oppoſition. The periodic times are as follows:

First	Second	Third	Fourth
1d. 18h. 27′. 33″	3d. 13h. 13′. 42″	7d. 3h. 42′. 33″	16d. 16h. 32′ 8′

133. The diſtances of the ſatellites from jupiter, in terms of the ſemidiameter of jupiter, are as follows:

First	Second	Third	Fourth
5,965	9,194	15,141	26,63

134. The periodic times and diſtances of theſe ſatellites obſerve the ſame law as thoſe of the primaries reſpecting the ſun; that is, the ſquares of the periodic times have the ſame proportion to each other, as the cubes of their reſpective diſtances.

135. A ſatellite is ſometimes hidden behind the body of jupiter without entering into its ſhadow; and this is called an *occultation*.

On the Satellites of Saturn.

136. In the year 1665, HUYGENS diſcovered the

* The firſt ſatellite is that neareſt to the planet, and the others in their order from it,

fourth ſatellite of ſaturn. In 1671, CASSINI diſcovered the fifth; in 1672, he diſcovered the third; and in 1684, he diſcovered the firſt and ſecond. DR. HERSCHEL has diſcovered a ſixth and ſeventh ſatellite, which lie within the orbits of the other five. The planes of the orbits of them all, except the fifth in order from the planet, coincide very nearly with the plane of the ring of the planet. DR. HALLEY found that the orbit of the fourth (at that time diſcovered) was elliptical. The periodic times are as follows:

First	Second	Third	Fourth	Fifth	Sixth	Seventh
22h. 37′. 23″.	1d. 8h. 53. 9′.	1d. 21h. 18′. 27″.	2d. 17h. 41′. 22″	4d. 12h. 25′. 12″.	15d. 22h. 41′. 12″	79d 7h. 49′

137. Their diſtances from ſaturn, in terms of minutes and ſeconds of a degree, are as follows:

First	Second	Third	Fourth	Fifth	Sixth	Seventh
28″,7	36″,8	43″,5	56″	1′. 18″	3′. 0″	8′. 42″,5

138. The periodic times and diſtances obſerve the ſame law as thoſe of jupiter; ſee art. 134.

On the Satellites of the Georgian.

139. In 1787, DR. HERSCHEL, the diſcoverer of the *georgian*, diſcovered two ſatellites belonging to it; and he determined the ſynodic revolution of one of them to be 8d. 17h. 1′. 19,″3, and of the other 13d. 11h. 5′. 1″,5; alſo, the diſtance of the former from the planet in minutes and ſeconds of a degree, was found to be 33″,09, and of the latter 44″,23. And ſince theſe diſcoveries were made, the Doctor has diſcovered four more ſatellites; and found that the motions of them all are retrograde. Their orbits are nearly perpendicular to the plane of the ecliptic.

On the Ring of Saturn.

140. GALILEO was the firſt perſon who obſerved any thing extraordinary in *Saturn*. That planet appeared to him like a large globe between two ſmall ones. In 1610 he announced this diſcovery; and continued his obſervations till 1612, when he was ſurpriſed to find only the middle globe. But afterwards he again diſcovered the globes on each ſide, which, in proceſs of time, appeared to change their form. Upon this, HUYGENS ſet about improving the art of grinding object glaſſes; and made teleſcopes which magnified two or three times more than any which had been before made, with which he diſcovered the ring of ſaturn; and having obſerved it for ſome time, he publiſhed the diſcovery in 1656. The ring is broad and flat, at a diſtance from the planet, and edge-ways towards it. In 1675, CASSINI obſerved a dark line upon the ring, dividing it, as it were, into two rings, the inner of which appeared brighter than the outer. He alſo obſerved a dark belt upon the planet, parallel to the major axis of the ring; for though the ring is circular, yet, been ſeen obliquely, it appears an ellipſe. DR. HERSCHEL obſerves, that the black mark on the ring, is not in the middle of its breadth. The ring is no leſs ſolid than the planet, and it is generally brighter than the planet. He takes notice of the extreme thinneſs of the ring, as he ſaw a ſatellite on the edge, hanging over on each ſide.

141. The ring is inviſible when its plane paſſes through the earth, the ſun, or between them. In the firſt caſe, the ſun ſhines only on its edge, which is too thin to reflect light enough to render it viſible; in the ſecond caſe, the edge only being expoſed to us, it is inviſible for the ſame reaſon; in the third caſe, the dark ſide is towards us. DR. HERSCHEL ſuſpects that the ring is divided into two rings, for the following reaſons: 1ſt, The black diviſions on the two ſides, are exactly in the ſame ſituations. 2dly, The diviſion on the ring, and the open ſpace between the ring and the body, appear equally dark, and of the ſame colour as the heavens about the planet. Hence, he concludes, that ſaturn has two concentric rings, ſituated in one plane, the dimenſions of which are in the following proportions:

	Parts
Inſide diameter of the ſmaller ring	5900
Outſide diameter	7510
Inſide diameter of the larger ring	7740
Outſide diameter	8300
Breadth of the inner ring	805
Breadth of the outer ring	280
Breadth of the ſpace between the rings	115

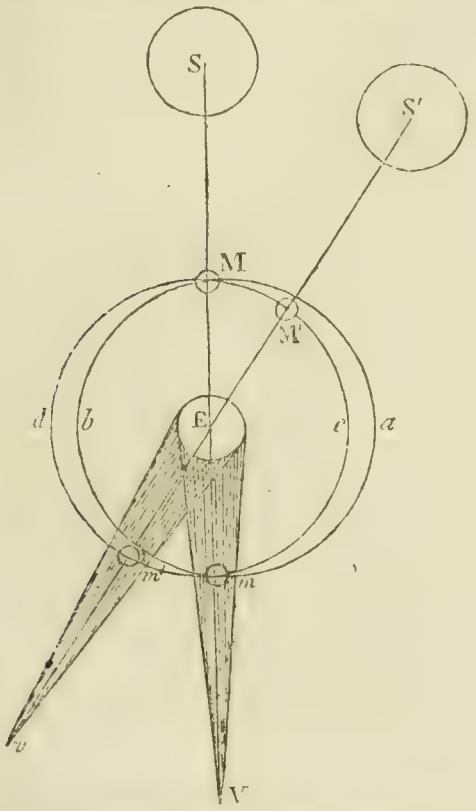
From the mean of a great many meaſures of the outſide diameter of the larger ring, DR. HERSCHEL makes it 46″,677 at the mean diſtance of ſaturn; and hence, he finds the diameter of the ring to be 204883 miles; and the diſtance of the two rings 2839 miles.

On Eclipſes of the Sun and Moon.

142. An eclipſe of the *moon* is cauſed by its entering into the earth's ſhadow, and conſequently it muſt happen at the *full* moon, or when ſhe is in oppoſition to the ſun, as the ſhadow of the earth muſt lie oppoſite to the ſun. An eclipſe of the *ſun* is cauſed by the interpoſition of the

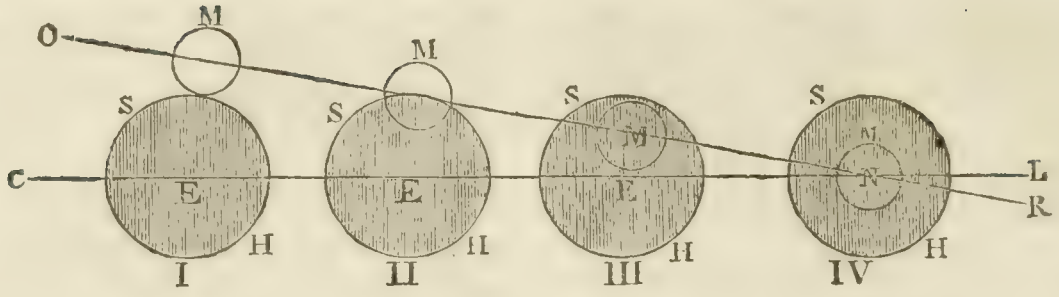
the moon between the earth and ſun, and therefore it muſt happen when the moon is in conjunction with the ſun, or at the *new* moon.

143. If the plane of the moon's orbit coincided with the plane of the ecliptic, there would be an eclipſe at every conjunction and oppoſition; but the plane of the moon's orbit being inclined to the plane of the ecliptic, there can be no eclipſe at conjunction or oppoſition, unleſs at that time the moon be at, or near the node.



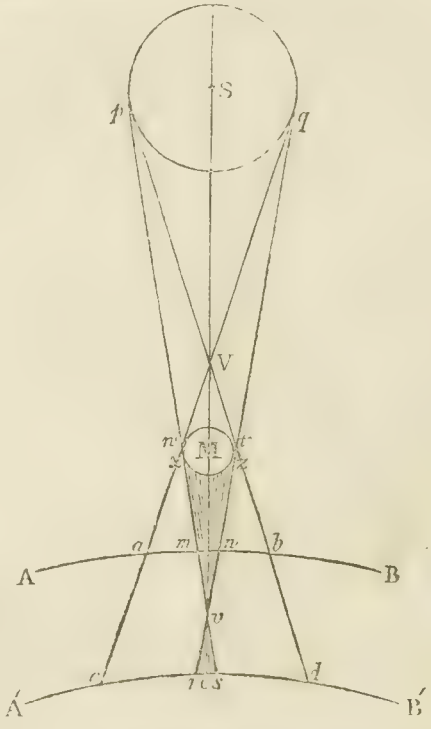
For let *S*, *S'* repreſent the ſun in two different ſituations, *E* the earth, and let the plane of the paper repreſent the plane in which the earth moves round the ſun, or the ecliptic; and let *Mcmd* repreſent the moon's orbit, inclined to the ecliptic, and cutting it in two points *M*, *m*, in the line *SEV*, then *MEm* is the line of the nodes, lying in conjunction and oppoſition, the ſun being at S; and we muſt conceive half the orbit *Mcm* to lie above the paper, and the other half *mdM* to lie below it; deſcribe alſo the circle *Mamb* on the paper; then theſe two circles *Mcmd*, *Mamb*, will be inclined to each other, like two hoops put one into the other, and inclined one to the other. Now if the moon be at *M* in conjunction with the ſun *S*, the three bodies are then in the ſame plane, and in the ſame ſtraight line, and therefore the moon is interpoſed between the ſun and earth, and cauſes an eclipſe of the ſun. But if the ſun be at *S'* and the moon in conjunction at *M'*, ſhe is then *out* of the plane of the ecliptic, the part *M'* lying *above* the plane of the paper, or the ecliptic, and therefore the moon is not in the line joining *S'* and *E*; and *M'* may be ſo far from the node at *M*, that it may be ſo much elevated above the plane of the ecliptic, as not to interpoſe between *S'* and *E*, in which caſe there can be no eclipſe of the ſun. Whether therefore there will be an eclipſe, or not, at conjunction, depends upon how far the moon at *M'* is diſtant from the node at *M*, at the time of conjunction. If the moon be at the node *m* at the time of oppoſition, the three bodies are then in the ſame ſtraight line, and the moon muſt paſs through the center of the earth's ſhadow, and be totally eclipſed. But if at the time of oppoſition to the ſun at *S'*, the moon be at *m'*, *m'* may be ſo far below the ſhadow *Ev* of the earth, that the moon may not paſs through it, in which caſe there will be no eclipſe. Whether therefore there will be a lunar eclipſe at the moon's oppoſition, or not, depends upon how far the moon at *m'* is diſtant from the node at *m*, at that time. But if the plane *Mcmd* of the moon's orbit coincided with the plane of the ecliptic, or the plane of the paper, there would manifeſtly be a central interpoſition every conjunction and oppoſition, and conſequently an eclipſe. It is alſo evident, that the place of the earth ſeen from the ſun is the ſame as the place of the earth's ſhadow, they both lying in the ſame line from the ſun.

144. The



144. The different eclipſes which may happen of the moon, may be thus explained. Let *CL* repreſent the plane of the ecliptic, *OR* the moon's orbit, cutting the ecliptic in the node *N*; and let *SH* repreſent a ſection of the earth's ſhadow at the diſtance of the moon from the earth, and *M* the moon at the time when it is in oppoſition to the ſun; for as the earth's ſhadow is always oppoſite to the ſun, when the moon paſſes by, or through the ſhadow, ſhe muſt be in oppoſition. Hence, if the oppoſition happen as in poſition I, it is clear that the moon will juſt paſs by the ſhadow of the earth without entering it, and there will be no eclipſe. In poſition II, part of the moon will paſs through the earth's ſhadow, and there will be a *partial* eclipſe. In poſition III, the whole of the moon paſſes through the earth's ſhadow, and there is a *total* eclipſe. In poſition IV, the center of the moon paſſes through the center of the earth's ſhadow, and there is a *total* and *central* eclipſe. It is plain therefore, that whether there will, or will not be an eclipſe at the time of oppoſition, depends upon the diſtance of the moon from the node at that time, or the diſtance of the earth's ſhadow from the node. Now it appears by calculation, that if *EN* be greater than 11°. 34′ at the time of oppoſition, there can be no eclipſe; and when *EN* is leſs than that quantity, there may be an eclipſe. The diſtance *EN* (=11°. 34′.) in poſition I, is called the *ecliptic limit* of a lunar eclipſe. Or as (by the laſt article) the place of the earth's ſhadow is the ſame as the place of the earth ſeen from the ſun, it is manifeſt, that if at the time of oppoſition we compute the place of the earth, and find it to be leſs than 11°. 34′, from the node, we know that there may be an eclipſe; and then we may proceed to the calculation; but for that, we muſt refer the reader to the Treatiſe before mentioned, as we can here only explain the general principles.

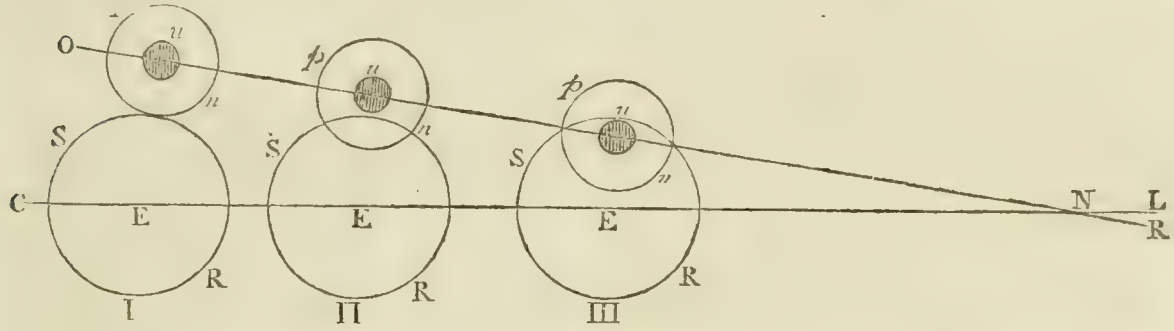
145. The phænomena of a ſolar eclipſe, may be thus explained.



Let *S* be the ſun, *M* the moon, *AB*, or *A′B′*, part of the ſurface of the earth, for at different times, the earth is at different diſtances from the moon; draw tangents *pxvs*, *qzvr*, from the ſun to the *ſame* ſide of the moon, and

and *xvz* will be the moon's *umbra*, in which no part of the ſun can be ſeen; and if tangents *ptbd*, *qwac*, be drawn from the ſun to the *oppoſite* ſides of the earth, the ſpace comprehended between the umbra, and *wac*, *tbd*, is called the *penumbra*, in which only a part of the ſun can be ſeen. Now it is manifeſt, that if *AB* be the ſurface of the earth, the ſpace *ma*, where the umbra falls, will ſuffer a *total* eclipſe; the parts *am*, *bn*, between the boundaries of the umbra and penumbra, will ſuffer a *partial* eclipſe; but to all the other parts of the earth there will be no eclipſe, no part of the ſun being there hidden by the moon. Now let *A'B'* be the ſurface of the earth; then the ſpace *rs* will ſuffer an *annular* and *partial* eclipſe, the ſun appearing all round the moon, in the form of a ring; the parts *cr*, *ds*, will ſuffer a *partial* eclipſe; and the other parts of the earth will ſuffer no eclipſe. In this ſituation of the earth, there can therefore be no total eclipſe anywhere.

146. The umbra *xvz* is a cone, whoſe vertex is *v*; and the penumbra *wcdt* is the fruſtrum of a cone, whoſe vertex is *V*. Hence, if theſe be both cut through their common axis, and perpendicular to it, the ſection of each will be a circle, having a common center in the axis, which is the line joining the centers of the ſun and moon; and the ſection of the penumbra includes that of the umbra.



147. The different eclipſes which may happen of the *ſun*, may be thus explained. Let *CL* repreſent the orbit of the earth; *OR* the line deſcribed by the centers of the moon's umbra and penumbra at the earth; *N* the moon's node; *SR* the earth; *pn* the moon's penumbra, and *u* the umbra. Then in poſition I, the penumbra juſt paſſes by the earth, without falling upon it, and therefore there will be no eclipſe. In poſition II, the penumbra falls upon the earth, but the umbra does not, therefore there will be a *partial* eclipſe where the penumbra paſſes over, but no total eclipſe. In poſition III, both the penumbra and umbra fall upon the earth; therefore where the umbra paſſes over, there will be a *total* eclipſe; where the penumbra only paſſes over, there will be a *partial* eclipſe; and to the other parts of the earth there will be no eclipſe. It is manifeſt therefore that whether there will be an eclipſe, or not, or whether it will be partial or total, depends upon the earth's diſtance from the node, at the time of conjunction. Now it appears by calculation, that, if at conjunction, *EN* be greater than 17°. 21', there can be no eclipſe, but if it be leſs, there may be one. The diſtance *EN* (=17°. 21') in poſition I, is called the *ecliptic limit* of a ſolar eclipſe.

148. The ecliptic limits of the ſun are to thoſe of the moon as 17°. 21' to 11°. 34', or nearly as 3 to 2, and hence there will be more ſolar than lunar eclipſes, in about that ratio. But more lunar than ſolar eclipſes are ſeen at any given place, becauſe a lunar eclipſe is viſible to a whole hemiſphere of the earth at once; whereas a ſolar eclipſe is viſible to a part only, and therefore there is a greater probability of ſeeing a lunar than a ſolar eclipſe. Since the moon is as long above the horizon as below, every ſpectator may expect to ſee half the number of lunar eclipſes which happen.

149. If the earth had no atmoſphere, when the moon was totally eclipſed, ſhe would be inviſible; but by the refraction of the atmoſphere, ſome rays will be brought to fall on the moon's ſurface, on which account the moon is rendered viſible, and of a duſky red colour.

150. An eclipſe of the *moon* ariſing from a real deprivation of light, muſt appear to begin at the ſame inſtant of time to every place on that hemiſphere of the earth which is next the moon. Hence, it affords a ready method of finding the longitudes of places upon the earth's ſurface, as will be afterwards explained.

151. The diameters of the ſun and moon are ſuppoſed to be divided into 12 equal parts, called *digits*, and an eclipſe is ſaid to be ſo many digits, according to the number of thoſe parts which are involved at the greateſt darkneſs.

152. The greateſt number of eclipſes which can happen in a year is ſeven, and when this happens, five will be of the ſun and two of the moon. The leaſt number which can happen is two, and theſe muſt be both ſolar; for in every year there muſt be two ſolar eclipſes. The mean number in a year is about four.

153. In a total eclipſe of the ſun, the planets, and ſome of the brighteſt of the fixed ſtars, have been ſeen.

154. There are two ſeaſons in the year when eclipſes happen,

happen, that is, when the earth approaches near each node, as before ſhown; and as the nodes lie at oppoſite points of the earth's orbit, theſe ſeaſons would be at the diſtance of half a year from each other, if the nodes were ſtationary; but as the nodes have a retrograde motion of about 19° in a year, and the earth moves about a degree in a day, the ſeaſons of eclipſes will return at an interval of about 9 or 10 days leſs than half a year; ſo that if there be eclipſes about the middle of January, the next eclipſes may be expected about the firſt week of July.

On the Nature and Motion of Comets.

155. Comets are ſolid bodies revolving in very excentric ellipſes about the ſun in one of the foci, and are ſubject to the ſame laws as the planets are; but they differ in appearances from them; for they are very faint bodies, and in ſome of them, as they approach the ſun, a tail of light begins to appear, which increaſes till the comet comes to its perihelion, and then it decreaſes again, and vaniſhes. The ancient philoſophers ſuppoſed them to be planets. ARISTOTLE ſays, that ſome *Italians* called *Pythagoreans*, ſay, that a comet is one of the planets. APOLLONIUS affirms, that the comets were, by the *Chaldeans*, reckoned amongſt the planets, and had their periods. SENECA having conſidered the phænomena of two remarkable comets, believed them to be of equal duration with the world, though he was ignorant of the laws which governed them: and foretold, that future ages would unfold theſe myſteries. He recommended it to aſtronomers to keep a catalogue of them, in order to be able to determine whether they returned at certain periods. Notwithſtanding this, moſt aſtronomers from his time to TYCHO BRAHE conſidered them only as meteors, exiſting in our atmoſphere; but he, finding that they had no diurnal parallax, placed them above the moon. At length SIR I. NEWTON having proved that KEPLER's law, by which the motions of the planets are regulated, was a neceſſary conſequence of his theory of gravity, it immediately followed, that comets were governed by the ſame law; and the obſervations upon them agreed ſo accurately with his theory, as to leave no doubt of its truth. Comets therefore revolve in very excentric ellipſes about the ſun in one of the foci. Aſtronomers, however, for the eaſe of calcution, ſuppoſe them to move in parabolic orbits, for that part which lies within the reach of obſervation, by which they can, with great accuracy, find the place of the perihelion; its diſtance from the ſun; the inclination of the plane of its orbit to the ecliptic; and the place of the node, but not the periodic time.

156. DR. HALLEY ſuppoſed that the comet which was obſerved by APIAN, in 1531, was the ſame as that which KEPLER and LONGOMONTANUS deſcribed in 1531; and the ſame as that which he obſerved in 1682; and having computed the effect of Jupiter upon it at that time, he found that it would increaſe its periodic time above a year; in conſequence of which he predicted its return at the end of the year 1758, or the beginning of 1759. He informs us that he did not make his computations with the utmoſt accuracy; but his prediction was right, for it was ſeen on Dec. 14, 1758, and paſſed its perihelion on March 13, 1759. Thus he had the glory of firſt foretelling the return of a comet.

157. Comets are not viſible till they return into the planetary regions. They are ſurrounded with a very denſe atmoſphere, and from the ſide oppoſite to the ſun, they frequently ſend forth a tail, which increaſes as the comet approaches its perihelion, immediately after which it is longeſt and moſt luminous, and then it is generally a little bent and convex towards thoſe parts to which the comet is moving; the tail then decreaſes, and at laſt it vaniſhes. The ſmalleſt ſtars are ſeen through the tail, notwithſtanding its great thickneſs, which ſhows that the matter of it is extremely rare. ARISTOTLE thought the tail to be a thin fiery vapour ariſing from the comet. APIAN, CARDAN, TYCHO, and others, ſuppoſed that the ſun's rays being propagated through the tranſparent head of the comet, were refracted, a by a lens. But the figure of the tail does not anſwer to this. KEPLER ſuppoſed that the ſun's rays carried off ſome of the groſs parts of the comet. SIR I. NEWTON thought that the tail was a very thin vapour which the head, or nucleus of the comet, ſends out by reaſon of its heat. DR. HALLEY, in his deſcription of the *Aurora Borealis* in 1716, ſays, "the ſtreams of light ſo much reſembled the long tails of comets, that at firſt ſight they might be well taken for ſuch." And afterwards, "this light ſeems to have a great affinity to that which the effluvia of electric bodies emit in the dark." D. DE MAIRAN calls the tail of a comet, the *Aurora Borealis* of the comet. This opinion DR. HAMILTON ſupports by the following arguments. The Aurora Borealis has no effect upon the ſtars ſeen through it, nor has the tail of a comet. The atmoſphere is known to abound with electric matter, and the appearance of the electric matter in vacuo, is exactly like the appearance of the Aurora Borealis, which, from its great altitude, may be conſidered to be in as perfect a vacuum as we can make. The electric matter in vacuo ſuffers the rays of light to paſs through, without being affected by them. The tail of a comet does not ſpread itſelf ſideways, nor does the electric matter. Hence, he ſuppoſes the tails of comets, the aurora borealis, and the electric fluid, to be matter of the ſame kind.

158. In reſpect to the nature of comets, SIR I. NEWTON obſerves, that they muſt be ſolid bodies, like the planets. For if they were nothing but vapours, they muſt be diſſipated when they come near the ſun. For the comet in 1680, when in its perihelion, was nearer to the ſun than one ſixth of its diameter, therefore the heat of the comet at that time was to ſummer heat, as 28000 to 1. But the heat of boiling water is about 3 times greater than the heat which dry earth acquires from the ſummer ſun; and the heat of red hot iron is about 3 or 4 times greater than the heat of boiling water. Therefore the heat of dry earth at the comet, when in its perihelion,

helion, was about 2000 times greater than red hot iron. By ſuch heat, all vapours would be immediately diſſipated.

159. This heat of the comet muſt be retained a long time. For a red hot globe of iron of an inch diameter, expoſed to the open air, ſcarcely loſes all its heat in an hour; but a greater globe would retain its heat longer, in proportion to its diameter, becauſe the ſurface, at which it grows cold, varies in that proportion leſs than the quantity of hot matter. Therefore a globe of red hot iron as big as the earth, would ſcarcely cool in 50000 years.

160. From the beginning of our æra to this time, it is probable, according to the beſt accounts, that there have appeared about 500 comets. Before that time, about 100 others are recorded to have been ſeen, but it is probable, that not above one half of them were comets.

On the fixed Stars.

161. All the heavenly bodies beyond our ſyſtem, are called *fixed ſtars*, becauſe (ſome few excepted) they do not appear to have any proper motion of their own. From their immenſe diſtance, they muſt be bodies of very great magnitudes, otherwiſe they could not be viſible; and when we conſider the weakneſs of reflected light, there can be no doubt but that they ſhine with their own light. They are eaſily known from the planets, by their twinkling. Dr. Herschel, by his late improvements in teleſcopes, has diſcovered that the number of fixed ſtars is great beyond all conception. In the *milky way*, he has, in a quarter of an hour, ſeen 116000 ſtars paſs through his teleſcope, the field of view of which was only 15′ aperture. Theſe ſtars, which can be of no uſe to us, are probably ſuns to other ſyſtems of planets.

162. From an attentive examination of the ſtars with good teleſcopes, many which appear only ſingle to the naked eye, are found to conſiſt of two, three, or more ſtars. Dr. Maskelyne had obſerved *α herculis* to be a double ſtar; and other aſtronomers have diſcovered many others to be double. Dr. Herschel has found about 700, of which, not above 42 had been before obſerved. We will here mention a few of them.

α Herculis, a beautiful double ſtar; the two ſtars very unequal; the largeſt is red, and the ſmalleſt blue, inclining to green.

γ Andromedæ, double, very unequal; the larger reddiſh white, the ſmaller a fine bright ſky blue, inclining to green.

α Geminorum, double, a little unequal, both white.

β Lyræ, quadruple, unequal, white, but three of them a little inclined to red.

ε Bootis, double, very unequal, larger reddiſh, ſmaller blue, or rather a faint lilac.

ν Lyræ, treble, very unequal, larger white, ſmaller both duſky.

α Lyræ, double, very unequal, larger a fine brilliant white, ſmaller duſky.

These are a few of the principal double, treble and quadruple ſtars mentioned by Dr. Herschel in the *Phil. Tranſ.* 1785.

163. Several ſtars mentioned by the ancient aſtronomers are not now to be found; and ſeveral are now obſerved, which do not appear in their catalogues. The moſt ancient obſervation of a new ſtar, is that by Hipparcus, about 120 years before J. C. which occaſioned his making a catalogue of the fixed ſtars, in order that future aſtronomers might ſee what alterations had taken place ſince his time. Cornelius Gemma, on Nov. 8, 1572, obſerved a new ſtar in the *chair of caſſiopea*. It exceeded *ſirius* in brightneſs, and was ſeen at mid-day. It firſt appeared bigger than *jupiter*; but it gradually decayed, and after 16 months it entirely diſappeared. It was obſerved by Tycho, who found that it had no ſenſible parallax; and he concluded that it was a fixed ſtar.

164. Many ſtars appear and diſappear at certain periods. On Auguſt 13, 1596, David Fabricius obſerved a new ſtar in the *neck of the whale*. It diſappeared after October in the ſame year. Phocyllides Holwarda diſcovered it again in 1637; and after it had diſappeared for 9 months, he ſaw it again. Bullialdus determined the periodic time of its greateſt brightneſs to be 333 days. Its greateſt brightneſs is that of a ſtar of the ſecond magnitude, and its leaſt, that of a ſtar of the ſixth.

165. In 1686, Kirchius obſerved *χ* in the *ſwan* to be a changeable ſtar, and found the period to be 405 days.

166 J. Goodricke, Eſq. has determined the periodic variation of *algol*, or *β perſei*, to be about 2d. 21h. Its greateſt brightneſs is of the ſecond, and leaſt of the fourth magnitude. It changes from the ſecond to the fourth, in about 3½ hours, and back again in the ſame time, and retains its full brightneſs for the remaining time. He alſo diſcovered that *β lyræ*, and *δ cephei*, are ſubject to a periodic variation of brightneſs; the former in 12d. 19h. and the latter in 5d. 8h. 37½′.

167. E. Pigott, eſq. diſcovered *η antinoi* to be a variable ſtar, with a period of 7d. 4h. 38′.

168. Dr. Herschel in the *Phil Tranſ.* 1783, has given a large collection of ſtars which were formerly ſeen, but are now loſt: alſo a catalogue of variable ſtars, and of new ſtars.

169. There have been various conjectures to account for the variable appearances of the changeable ſtars. M. Maupertuis ſuppoſes, that they may have ſo quick a motion about their axes, that their centrifugal forces may reduce them to flat oblate ſpheroids, not much unlike a mill-ſtone; and its plane may be inclined to the plane of the orbits of its planets, by whoſe attraction the poſition of the body may be altered, ſo that when its plane paſſes through the earth, it may be almoſt or entirely inviſible, and become viſible again as its broadſide is turned towards us. Others ſuppoſe that conſiderable parts of their ſurfaces are covered with dark ſpots, which render the body inviſible when they are turned towards us. Others conjecture that their diſappearance may

ariſe from dark bodies revolving about them, and interpoſing between them and us. The total diſappearance of a ſtar may probably be the deſtruction of its ſyſtem; and the appearance of a new ſtar, the creation of a new ſyſtem of planets.

170. The fixed ſtars are not all evenly ſpread through the heavens, but the greater part of them are collected into cluſters, which are diſcovered by high magniſying powers. With ſmall powers they appear ſmall whitiſh ſpots, called *nebulæ*. Some nebulæ however do not receive light from ſtars. HUYGENS diſcovered one in *orion's ſword*; it conſiſts only of 7 ſtars, and the other part is a bright ſpot. DR. HALLEY, in the ſouthern hemiſphere diſcovered one in the *centaur*, which is not viſible here. He alſo diſcovered another in *hercules*. CASSINI diſcovered one between the *great dog* and *the ſhip*, which he deſcribes as full of ſtars. M. DE LA CAILLE diſcovered 42 nebulæ. But DR. HERSCHEL has given us a catalogue of 2000 nebulæ and cluſters of ſtars, which he himſelf has diſcovered. He has alſo diſcovered other phænomena in the heavens, which he calls *nebulous ſtars*, that is, ſtars ſurrounded with a faint luminous atmoſphere, of a conſiderable extent.

On the Conſtellations.

171. The ancients divided the heavens into *conſtellations*, or collections of ſtars, and repreſented them by animals, and other figures, according as their diſpoſition ſuggeſted. The number of the ancient conſtellations was 48, but the preſent number upon a globe is 70. Thoſe ſtars which do not come into any of the conſtellations are called *unformed ſtars*. The ſtars viſible to the naked eye, are divided into 6 claſſes, according to their magnitudes; the largeſt are called of the firſt magnitude, the next of the ſecond, and ſo on. Thoſe which cannot be ſeen by the naked eye, are called *teleſcopic* ſtars. The ſtars are marked upon the globes with greek letters; the firſt letter of the greek alphabet being put for the largeſt ſtar of each conſtellation, and ſo on; and when more letters are wanted, the italic are generally uſed; this ſerves to point out the ſtar, and they were firſt thus deſcribed by BAYER. The following catalogue contains the number of ſtars in each conſtellation, according to different aſtronomers.

The Ancient Conſtellations.

		Ptolemy	*Tycho*	*Hevelius*	*Flamſtead*
Urſa minor	The little Bear	8	7	12	24
Urſa major	The great Bear	35	29	73	87
Draco	The Dragon	31	32	40	80
Cæpheus	Cæpheus	13	4	51	35
Bootes	Bootes	23	18	52	54
Corona borealis	The northern Crown	8	8	8	21
Hercules	Hercules kneeling	29	28	45	113
Lyra	The Harp	10	11	17	21
Cygnus	The Swan	19	18	47	81
Caſſiopea	The Lady in the Chair	13	26	37	55
Perſeus	Perſeus	29	29	46	59
Auriga	The Waggoner	14	9	40	66
Serpentarius	Serpentarius	29	15	40	74
Serpens	The Serpent	18	13	22	64
Sagitta	The Arrow	5	5	5	18
Aquila	The Eagle	15	12	23	71
Antinous	Antinous		3	19	
Delphinus	The Dolphin	10	10	14	18
Equulus	The Horſes's head	4	4	6	10
Pegaſus	The flying Horſe	20	19	38	89
Andromeda	Andromeda	23	23	47	66
Triangulum	The Triangle	4	4	12	16
Aries	The Ram	18	21	27	66
Taurus	The Bull	44	43	51	141
Gemini	The Twins	25	25	38	85
Cancer	The Crab	23	15	29	83

The Ancient Conſtellations continued.

		Ptolemy	*Tycho*	*Hevelius*	*Flamſtead*
Leo	The Lion	35	30	49	95
Coma Berenices	Berenice's Hair		14	21	43
Virgo	The Virgin	32	33	50	110
Libra	The Scales	17	10	20	51
Scorpius	The Scorpion	24	10	20	44
Sagittarius	The Archer	31	14	22	69
Capricornus	The Goat	28	28	29	51
Aquarius	The Water-bearer	45	41	47	108
Piſces	The Fiſhes	38	36	39	113
Cetus	The Whale	22	21	45	97
Orion	Orion	38	42	62	78
Eridanus	Eridanus	34	10	27	84
Lepus	The Hare	12	13	16	19
Canis major	The great Dog	29	13	21	31
Canis minor	The little Dog	2	2	13	14
Argo	The Ship	45	3	4	64
Hydra	The Hydra	27	19	31	60
Crater	The Cup	7	3	10	31
Corvus	The Crow	7	4		9
Centaurus	The Centaur	37			35
Lupus	The Wolf	19			24
Ara	The Altar	7			9
Corona auſtralis	The ſouthern Crown	13			12
Piſcis auſtralis	The ſouthern Fiſh	18			24

The New Southern Conſtellations.

Columba Noachi	Noah's Dove	10
Robur Carolinum	The Royal Oak	12
Grus	The Crane	13
Phœnix	The Phœnix	13
Indus	The Indian	12
Paos	The Peacock	14
Apus, *Avis Indica*	The Bird of Paradiſe	11
Apis, *Muſca*	The Bee, or Fly	4
Chamæleon	The Chameleon	10
Triangulum auſtrale	The ſouth Triangle	5
Piſcis volans, *Paſſer*	The flying Fiſh	8
Dorado, *Xiphias*	The ſword Fiſh	6
Toucan	The American Gooſe	9
Hydrus	The water Snake	10

HEVELIUS's *Conſtellations, made of the unformed Stars.*

Lynx	The Lynx	19	44
Leo minor	The little Lyon		53
Aſterion and Chara	The Greyhounds	23	25
Cerberus	Cerberus	4	
Vulpecula and Anſer	The Fox and Gooſe	27	35
Scutum Sobieſki	Sobieſki's Shield	7	
Lacerta	The Lizard		16
Camelopardalis	The Chamelopard	32	58
Monoceros	The Unicorn	19	31
Sextans	The Sextant	11	41

The conſtellations as far as the triangle, with Coma Berenices, are *northern*; thoſe, after Piſces, in the ancient conſtellation, are *ſouthern*. Beſides the letters which are prefixed to the ſtars, many of them have names, as *ſyrius*, *regulus*, *arcturus*, &c.

On the proper Motion of the fixed Stars.

172. DR. MASKELYNE, in the firſt volume of his *Obſervations*, remarks, that many, if not all the fixed ſtars, have ſmall motions amongſt themſelves, called their *proper* motions. From comparing his own obſervations with thoſe of preceding aſtronomers, he firſt determined the proper motions of *ſirius*, *caſtor*, *procyon*, *pollux*, *regulus*, *arcturus*, and *α aquilæ*; afterwards he determined the proper motions of 35 ſtars in right aſcenſion. Theſe are given in a catalogue of the right aſcenſions of 36 principal ſtars, which he has determined to an extreme degree of accuracy, and which are now generally uſed as fundamental ſtars, in order to determine the right aſcenſions of all the other heavenly bodies. M. MAYER has determined the proper motion of 56 ſtars.

173. If the ſun be in motion as well as the ſtars, it will alter their apparent motion. In whatever direction our ſyſtem may be ſuppoſed to move, it is eaſy to ſee what effect it will have on the apparent motion of the ſtars. DR. HERSCHEL finds, that if a point be aſſumed about the 77° of right aſcenſion, and the ſun to move from it, it will account for the proper motions in right aſcenſion of the ſeven above-mentioned ſtars of DR. MASKELYNE; and if, inſtead of ſuppoſing the ſun to move in the equator, it ſhould aſcend to a point near to λ *herculis*, it will account for the obſerved change of declination of *ſirius* and *arcturus*; he means in reſpect to *direction*. He next obſerves, that this motion of the ſun will account for many of the proper motions obſerved by MAYER. Alſo, *ſirius* and *arcturus*, being the largeſt, are therefore probably the neareſt, and hence, they ought to have the greateſt apparent motion; and ſo we find they have. *Caſtor* is a double ſtar; now, how extraordinary muſt ſuch a concurrence appear, that two ſuch ſtars ſhould both have the ſame proper motion; for they are found to continue at the ſame diſtance from each other. This ſeems to point out the common cauſe, the motion of our ſyſtem. From arguments of this kind, DR. HERSCHEL thinks that the ſolar ſyſtem is in motion, in the direction above-mentioned.

On the Zodiacal Light.

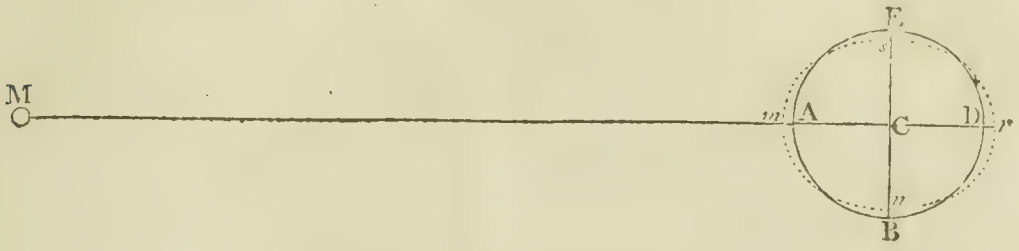
174. The *zodiacal light* is a pyramid of light which ſometimes appears in the morning and evening, before ſun riſe, and after ſun ſet. It has the ſun for its baſis, and in appearance reſembles the *aurora borealis*. Its ſides are not ſtraight, but a little curved, reſembling a lens ſeen edge-ways. It is generally ſeen in October and March, the twilight then being ſhorteſt. It was obſerved by CASSINI in 1683, a little before the vernal equinox, in the evening, extending along the ecliptic from the ſun. He thinks that it had been obſerved before; for MR. J. CHILDREY, in a book publiſhed in 1661, gives an account of a phænomenon which was probably the ſame. M. FATIO de DUILLIER obſerved it ſoon after CASSINI. In 1707, on April 3, it was obſerved by Mr. DERHAM in *Eſſex*. It appeared about a quarter of an hour after ſun ſet, and extended 15° or 20° above the horizon. It is generally ſuppoſed, that it is matter which is thrown off from the ſun, by its rotation about its axis.

On the Tides.

175. The true cauſe of the tides was diſcovered by KEPLER. He ſays that *gravity* is a power which is mutual between two bodies; and that the earth and moon would move towards each other, and meet at a point as much nearer to the earth than the moon, as the moon is leſs than the earth, if their motions in their orbits did not hinder them. And he further ſays, that the tides ariſe from the gravity of the waters towards the moon. SIR I. NEWTON, from his *Theory of Gravity*, has explained the general principle upon which the phænomena of the tides depend, from the unequal gravitation of the different parts of the earth towards the ſun and moon.

176. If

176. If the earth were entirely fluid, and at reſt, by the mutual gravity of its parts it muſt form itſelf into a perfect ſphere. But if one part be attracted by a diſtant body more than another, the figure muſt neceſſarily be changed.



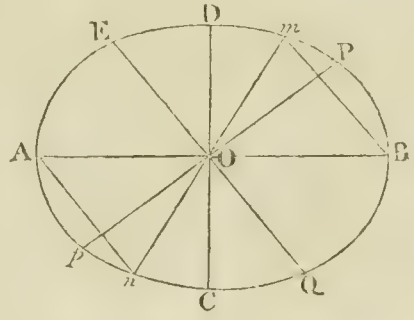
For let *ABDE* be the earth, ſuppoſed firſt to be a perfect ſphere, and let *M* be a diſtant body attracting it; then as the force of attraction varies inverſely as the ſquare of the diſtance, the nearer parts of the earth to *M* will be more attracted than thoſe further diſtant. The parts at *A* will therefore be more attracted towards *M* than thoſe at the center *C*, and thoſe at the center *C* more than thoſe at *D*; ſo that A will be draw from *C*, and *C* from *D*; and the effect of drawing *C* from *D* is the ſame as that of drawing *D* from *C* in the oppoſite direction. It is manifeſt therefore, that the parts at *A* and *D* will recede from *C*; and, in general, all the parts of *EAB* which are nearer to *M* than *C* is, will be drawn from *C*; and all the parts of *EDB*, which are further from *M* than *C* is, will be left by *C*, or may be ſuppoſed to be drawn from *C* in the oppoſite direction. Thus, the waters will riſe higher at *A* and *D*, and being drawn from *ECB* both ways, they muſt fall at *E* and *B*, and the earth will put on the elliptical form *mnrs*, and make high tide at *m* and *r*, on oppoſite ſides, at the ſame time; and there will be low tide at *n* and *s* at the ſame time, at two oppoſite points, which are 90° from the high tides. *M* may repreſent either the ſun or moon; but the effect of the moon, from its nearneſs to the earth, is much greater than that of the ſun; we conſider therefore the moon as principally ruling the tides. As the earth turns about its axis once every day, every part of the earth will come once to the moon in a day, and once oppoſite to the moon, and therefore there will be two high tides every day, and the water will fall to its loweſt, twice in a day. Or more accurately, the two tides happen in about 24h. 50′; for on account of the moon's motion in her orbit, it is that interval from the time the moon leaves the meridian till ſhe returns to it the next time.

177. When the ſun and moon are in conjunction, or in oppoſition to each other, they will both tend to raiſe the waters at the ſame places, and therefore the tides will then be the higheſt, and theſe are called *ſpring* tides; but when the ſun and moon are 90° from each other, the ſun will tend to depreſs thoſe parts which the moon tends to raiſe, and therefore they oppoſing each others effects, the tides will then be the loweſt; and theſe are called *neap* tides. Hence, there will be the higheſt tides at new and full moon, and loweſt when the moon is at her firſt and third quarters.

178. The water will continue to riſe for ſome time after it has paſſed the moon, as the effect of the moon will continue though in a ſmaller degree, ſo that the water will not be the higheſt at the time when the moon is on the meridian, but it will ſometimes happen, one, two, or three hours after, according to the circumſtances which may oppoſe the motion of the waters.

179. Sir I. Newton has ſhown that the effect of the moon to raiſe the tides, increaſes as the cube of the diſtance decreaſes; hence, when the moon is at its leaſt diſtance, the effect will be the greateſt. The ſame is true in reſpect to the ſun.

180. The tides are greateſt when the attracting body, ſun or moon, is in the equator.



For let, for inſtance, the moon be in the equator *AQBD*, and let *A* and *B* be the two points of high tide, and *C* and *D* the two points of low tide; then the axis of the earth being here perpendicular to the plane *AQBD*, a ſpectator at *A* or *B*, where it is high tide, will, by the earth's rotation, be carried to *C* or *D*, where it is low tide, and therefore the difference between *OA* and *OC* will expreſs the difference of the heights of the water at high and low tide. Now ſuppoſe *POp* to

be

be the earth's axis, EQ the equator, An, Bm, two parallels to it, the moon deſcribing the parallel nm. Then by the earth's rotation, the places A and B are carried from A to n, and from B to m, and then from n to A, and from m to B. Hence, the high tides to thoſe two places are at A and B, and the low tides at n and m; therefore the difference between the height of the high and low tides will be the difference of OA and On, and of OB and Om; and as Om and On, are greater than OC, the difference of the tides is leſs here than when the moon was in the equator. Hence, the tides are higheſt when the moon is in the equator; and as the moon recedes from the equator, the tides diminiſh.

181. Hence, the higheſt tides are when the new or full moon happens at the time when the ſun is in the equator, or about March 22d, and September the 22d, for then the moon, which is in conjunction with or oppoſition to the ſun at thoſe times, muſt alſo be in the equator. And if the moon be alſo then at its neareſt diſtance, the tides will be the greateſt of all.

182. That the tides may have their full effect, the ſurface of the earth ought to be covered with water; and hence, in large ſeas the effect is greateſt. This is the reaſon that the tides are not ſo great in the torrid zone, between *Africa* and *America*, where the ocean is narrower, as in the temperate zones on either ſide. And from this we may underſtand why the tides are ſo ſmall in iſlands that are very far diſtant from ſhores. In the Atlantic, the water cannot riſe on one ſhore but by deſcending on the other; ſo that, at the intermediate diſtant iſlands, it will vary but a little from the mean height.

183. As the tides paſs over ſhoals, and run through ſtraights into bays of the ſea, their motion becomes more various, and their heights depend on many circumſtances. It is high water on the coaſts of *Spain* and the weſt of *Ireland*, about 3 hours after the moon has paſſed the meridian. From thence it flows into the adjacent channels, as it finds the eaſieſt paſſage. One current from it, for example, runs up by the ſouth of *England*, another comes in by the north of *Scotland*. They take a conſiderable time to move all this way, and it is high water ſooner in the places to which they firſt come; and it begins to fall at theſe places, whilſt they are riſing further on in their courſe. As they return they are not able to raiſe the tide, becauſe the water runs faſter off then it returns, till, by a new tide from the open ocean, the return of the current is ſtopped, and the water begins to riſe again. The tide takes 12 hours to come from the ocean to *London*, ſo that when it is high water there, a new tide is already come into the ocean, and in ſome intermediate place, it muſt be low water at the ſame time. When the tides run over ſhoals, and flow upon flat ſhores, the water riſes to a greater height than in the deep and open oceans; becauſe the force of its motion cannot be broke upon level ſhores, till the water riſes to a great height.

184. If a place communicate with two oceans, or two ways with the ſame ocean, one of which is a readier paſſage than the other, two tides may arrive at that place at different times, which interfering with each other, may produce a variety of phænomena. At *Batſha*, a port in the kingdom of *Tunquin*, in the *Eaſt Indies*, in latitude 20°. 50′ N. the day in which the moon paſſes the equator, the water ſtagnates without any motion: as the moon removes from the equator, the water begins to riſe and fall once a day, and it is high water at the ſetting of the moon, and low water at her riſing. This daily tide increaſes for about 7 or 8 days, and then decreaſes by the ſame degrees for the ſame time, till the motion ceaſes at the moon's return to the equator. When ſhe has paſſed the equator, and declines ſouthward, the water riſes and falls again as before; but it is high water now at the riſing, and low at the ſetting of the moon.

185. Sir I. Newton thus accounts for this phænomenon. To *Batſha* there are two inlets, one from the *Chineſe* Ocean between the Continent and the *Manillas*, the other from the *Indian* Ocean between the Continent and *Borneo*; and he ſuppoſes that a tide may arrive at *Batſha*, through one of theſe inlets at the third hour of the moon, and the other through the other inlet 6 hours after. For whilſt theſe tides are equal, the one flowing out as the other flows in, the water muſt ſtagnate. Now they are equal when the moon is in the equator; but when the moon gets on the ſame ſide of the equator with *Batſha*, the daily tide exceeds the nightly, ſo that two greater and two leſs tides muſt arrive at *Batſha* by turns. The difference of theſe will produce an agitation of the water, which will riſe to its greateſt height at the mean time between the two greateſt tides, and fall loweſt at the mean time between the two leaſt tides; ſo that it will be high water about the ſixth hour at the ſetting of the moon, and low water at her riſing. When the moon gets on the other ſide of the equator, the nightly tide will exceed the daily, and therefore the high tide will be at the riſing, and the low tide at the ſetting of the moon. The ſame principles will account for other extraordinary tides which are obſerved.

186. There are no tides in lakes, becauſe they are generally ſo ſmall, that the moon attracts every part of them equally, and therefore no part of the water is raiſed above the other. The *Mediterranean* and *Baltic* Seas have very ſmall tides, becauſe the inlets by which they communicate with the ocean are ſo narrow that they cannot, in ſo ſhort a time, receive or diſcharge enough to raiſe or ſink their ſurfaces ſenſibly. In the *Mediterranean*, the tides produce a variation of about 1 foot in the height of the waters.

To find the Longitude of Places upon the Earth's Surface.

187. The ſituation of a place upon the ſurface of the earth, is determined from its latitude and longitude. The methods of finding the latitude we have already explained; but the longitude cannot be ſo readily found.

found.* *Philip* III. king of *Spain*, was the firſt perſon who offered a reward for its diſcovery; and the *ſtates* of *Holland* ſoon after followed his example. During the minority of LEWIS XV. of *France*, the regent power promiſed a great reward to any perſon who ſhould diſcover the longitude at ſea. In the time of of CHARLES II. the Sieur de St. PIERRI, a Frenchman, propoſed a method of finding the longitude by the moon. Upon this, a commiſſion was granted to Lord Viſcount BROUNKER, preſident of the Royal Society, Mr. FLAMSTEAD, and ſeveral others, to receive his propoſals, and give their opinions reſpecting it. Mr FLAMSTEAD gave his opinion, that if we had the places of the fixed ſtars, and tables of the moon's motion, we might find the longitude, but not by the method of the Sieur de St. PIERRE. Upon this, Mr. FLAMSTEAD was appointed aſtronomer royal, and an obſervatory was built at Greenwich for him; and the inſtructions to him and his ſucceſſors were, "that they ſhould apply themſelves with the utmoſt care and diligence, to rectify the tables of the motions of the heavens, and the places of the fixed ſtars, in order to find out the ſo much deſired longitude at ſea, for the perfecting of the Art of Navigation."

188. In the year 1714, the *Britiſh* parliament offered a reward for the diſcovery of the longitude; the ſum of 10000 *l.* if the method determined the longitude to 1° of a great circle, or to 60 geographical miles; of 15000 *l.* if it determined it to 40 miles; and of 20000 *l.* if it determined it to 30 miles; with this proviſo, that if any ſuch method extend no further than 30 miles adjoining to the coaſt, the propoſer ſhould have no more than half the rewards. The act alſo appoints the firſt Lord of the Admiralty, the Speaker of the Houſe of Commons, the firſt Commiſſioner of Trade, the Admirals of the Red, White and Blue Squadrons, the Maſter of Trinity Houſe, the Preſident of the Royal Society, the Royal Aſtronomer at Greenwich, the two Savilian Profeſſors at Oxford, and the Lucaſian and Plumian Profeſſors at Cambridge, with ſeveral other perſons, as Commiſſioners for the Longitude at Sea. The Lowndian Profeſſor at Cambridge was afterwards added. After this act of parliament, ſeveral other acts paſſed in the reigns of GEORGE II. and III. for the encouragement of finding the longitude. At laſt, in 1774, an act paſſed, repealing all other acts, and offering ſeparate rewards to any perſon who ſhould diſcover the longitude, either by the watch keeping true time within certain limits, or by the lunar method, or by any other means. The act propoſes as a reward for a time-keeper, the ſum of 5000 *l.* if it determine the longitude to 1° or 60 geographical miles; the ſum of 7500 *l.* if it determine it to 40 miles; and the ſum of 10000 *l.* if it determine it to 30 miles, after proper trials ſpecified in the act. If the method be by improved ſolar and lunar tables, conſtructed upon SIR I. NEWTON's Theory of Gravitation, the author ſhall be entitled to 5000 *l.* if ſuch tables ſhall ſhow the diſtance of the moon from the ſun and ſtars, within fifteen ſeconds of a degree, anſwering to about ſeven minutes of longitude, after allowing half a degree for the errors of obſervation. And for any other method, the ſame rewards are offered as thoſe for time-keepers, provided it gives the longitude true within ſame limits, and be practicable at ſea. The commiſſioners have alſo a power of giving ſmaller rewards, as they ſhall judge proper, to any one who ſhall make any diſcovery for finding the longitude at ſea, though not within the above limits. Provided however, that if ſuch perſon or perſons ſhall afterwards make any further diſcovery as to come within the above mentioned limits, ſuch ſum or ſums as they may have received, ſhall be conſidered as part of ſuch greater reward, and deducted therefrom accordingly.

189. After the deceaſe of MR. FLAMSTEAD, DR. HALLEY, who was appointed to ſucceed him, made a ſeries of obſervations on the moon's tranſit over the meridian, for a complete revolution of the moon's apogee, which obſervations being compared with the computations from the tables then extant, he was enabled to correct the tables of the moon's motions. And as Mr. HADLEY had then invented an inſtrument by which the altitudes and diſtances of the heavenly bodies could be taken at ſea, Dr. HALLEY ſtrongly recommended the lunar method of finding the longitude.

To find the Longitude by a Time-keeper.

190. The ſun appears to move round the earth from eaſt to weſt, or to deſcribe 360°, in 24 hours, and therefore he appears to move 15° in an hour. If therefore the meridians of two places, make an angle of 15° with each other, or if the two places differ 15° in longitude, the ſun will come to the eaſtern meridian 1 hour before he comes to the weſtern meridian, and therefore when it is 12 o'clock at the former place, it is only eleven at the latter; and in general, the difference between the times by the clock at any two places, will be the difference of their longitudes, converted into time at the rate of 15° for an hour, the time at the eaſtern place being the forwardeſt. If therefore we can tell what o'clock it is at any two places, at the ſame inſtant of time, we can find the difference of their longitudes, by allowing 15° for every hour that the clocks differ.

* In many of the old maps, the firſt meridian is made to paſs through *Ferro* in the Canaries, which is 17° 45'. 50" weſt of Greenwich. To reduce therefore the longitude from Ferro to that from Greenwich, *add* 17° 45'. 50" if the place be *weſt* of Ferro, and it gives the longitude weſt from Greenwich; if the place be *eaſt* of Ferro, and in longitude *leſs* than 17° 45'. 50". the difference of its longitude and 17°. 45'. 50", ſhows the longitude weſt from Greenwich; but if the longitude be *greater* than 17°. 45'. 50", the difference ſhows the longitude eaſt of Greenwich. Thus you may reduce the longitude from one place to that from any other.

191. Let therefore the time keeper be well regulated and ſet to the time at *Greenwich*, that being the place from which we reckon our longitude; then if the watch neither gains nor loſes, it will always ſhow the time at *Greenwich*, wherever you may be. Now to find the time by the clock at any other place, take the ſun's altitude, and thence find the time by article 61; now the time thus found is *apparent* time, or that found by the ſun, which differs from the time ſhown by the clock by the *equation of time*, as we have ſhown in article 79: we muſt therefore apply the equation of time to the time found by the ſun, and we ſhall get the time by the clock; and the difference between the time by the clock ſo found, and the time by the time keeper, or the time at *Greenwich*, converted into degrees at the rate of 15 for an hour, gives the longitude of the place from *Greenwich*. For example, let the time by the time-keeper, when the ſun's altitude was taken, be 6h. 19′, and let the time deduced from the ſun's altitude be 9h. 27′, and ſuppoſe at that time the equation of time to be 7′, ſhowing how much the ſun is that day behind the clock, then the time by the clock is, 9h. 34′, the difference between which and 6h. 19′ is 3h. 15′; and this converted into degrees, at the rate of 15° for 1 hour, gives 48°. 45′, the longitude of the place from *Greenwich*; and as the time is forwarder than that at *Greenwich*, the place lies to the *eaſt* of *Greenwich*. Thus the longitude could be very eaſily determined, if you could depend upon the time-keeper. But as a watch will always gain or loſe, before the time-keeper is ſent out, its gaining or loſing every day for ſome time, a month for inſtance, is obſerved; this is called the *rate of going* of the watch, and from thence the *mean* rate of going is thus found.

192. Suppoſe I examine the rate of a watch for 30 days; on ſome of thoſe days I find it has gained, and on ſome it has loſt; add together all the quantities it has gained, and ſuppoſe they amount to 17″; add together all the quantities it has loſt, and ſuppoſe they amount to 13″; then, upon the whole, it has gained 4″ in 30 days, and this is called the *mean* rate for that time, and this divided by 30, gives 0″,133 for the *mean daily* rate of gaining; ſo that if the watch had gained regularly 0″,133 every day, at the end of the 30 days it would have gained juſt as much as it really did gain, by ſometimes gaining and ſometimes loſing. Or you may get the *mean daily* rate thus. Take the *difference* between what the clock was too faſt, or too ſlow, on the firſt and laſt days of obſervation, if it be too faſt, or too ſlow, on each day; but take the *ſum*, if it be too faſt on one day and too ſlow on the other, and divide by the number of days between the obſervations, and you get the mean daily rate. Thus, if the watch was too faſt on the firſt day 18″, and too faſt on the laſt day 32″, the *difference* 14″ divided by 30 gives 0″,466 the *mean daily* rate of gaining. But if the watch was too faſt on the firſt day 7″, and too ſlow on the laſt day 10″, the *ſum* 17″ divided by 30 gives 0″,566 the *mean daily* rate of loſing. After having thus got the mean daily rate of gaining or loſing and knowing how much the watch was too faſt or too ſlow at firſt, you can tell, according to that rate of going, how much it is too faſt or too ſlow, at any other time. In the firſt caſe, for inſtance, let the watch have been 1′. 17″ too faſt at firſt, and I want to know how much it is too faſt 50 days after that time; now it gains 0″,133 every day, if this be multiplied by 50 it gives 6″,65 for the whole gain in 50 days; therefore at the end of that time the watch would be 1′. 23″,65 too faſt. This would be the error, if the watch continued to gain at the above rate; and although, from the different temperatures of the air, and the imperfection of the workmanſhip, this cannot be expected, yet the probable error will by this means be diminiſhed, and it is the beſt method we have to depend upon. In watches which are under trial at the Royal Obſervatory at *Greenwich*, as candidates for the rewards, this allowance of a mean rate is admitted, although it is not mentioned in the act of parliament; the commiſſioners however are ſo indulgent as to grant it, which is undoubtedly favourable to the watches.

193. As the rate of going of a watch is ſubject to vary from ſo many circumſtances, the obſerver, whenever he goes aſhore, and has ſufficient time, ſhould compare his watch for ſeveral days with the true time found by the ſun, by which he will be able to find its rate of going. And when he comes to a place whoſe longitude is known, he may then ſet his watch again to *Greenwich* time; for when the longitude of a place is known, you know the difference between the time there and at *Greenwich*. For inſtance, if he go to a place known to be 30° eaſt longitude from *Greenwich*, his watch ſhould be 2 hours ſlower than the time at that place. Find therefore the true time at that place, by the ſun, and if the watch be 2 hours ſlower, it is right; if not, correct it by the difference, and it again gives *Greenwich* time.

194. In long voyages, unleſs you have ſometimes an opportunity of adjuſting the watch to *Greenwich* time, its error will probably be conſiderable, and the longitude deduced from it, will be ſubject to a proportional error. In ſhort voyages, a watch is undoubtedly very uſeful; and alſo in long ones, where you have the means of correcting it from time to time. It ſerves to carry on the longitude from one known place to another, ſuppoſing the interval of time not very long; or to keep the longitude from that which is deduced from a lunar obſervation, till you can get another. Thus the watch may be rendered of great ſervice in navigation.

To find the Longitude by an Eclipſe of the Moon, and of Jupiter's Satellites.

195. By an eclipſe of the *moon*. This eclipſe begins when the umbra of the earth firſt touches the moon, and ends when it leaves the moon. Having the times calculated when the eclipſe begins and ends at *Greenwich*, obſerve the times when it begins and ends at the place where you are; and the difference of theſe times, converted into degrees, gives the difference of the longitudes. For as the phaſes of the moon in an eclipſe, happen at the ſame inſtant at all places, the difference of the

the times at different places when the ſame phaſe is obſerved, ariſes from the difference of the clocks at thoſe places, and that difference (as before obſerved) converted into degrees, gives the difference of longitudes. If the beginning of an eclipſe happen at 6 o'clock at one place, and at 8 o'clock at another, theſe places differ 2 hours, or 30°, in longitude. This would be a very ready and accurate method, if the times of the firſt and laſt contact of the earth's umbra and the moon could be accurately obſerved; but the darkneſs of the penumbra continues to increaſe till it comes to the umbra, ſo that until the umbra actually gets upon the moon, it is not diſcovered. The umbra itſelf is alſo badly defined. The beginning and end of a lunar eclipſe, cannot, in general, be determined nearer than 1′ of time, and often not nearer than 2′ or 3′. Upon theſe accounts, the longitude, thus deduced, is ſubject to a conſiderable degree of uncertainty. Aſtronomers therefore determine the difference of longitudes of two places, by correſponding obſervations of other phaſes, that is, when the umbra biſects any ſpots upon the ſurface. And this can be determined to a greater degree of accuracy, than the beginning and end; for when the umbra is got upon the moon's ſurface, the obſerver has leiſure to conſider and fix upon the proper line of termination, in which he will be aſſiſted by running his eye along the circumference of the umbra. Thus the coincidence of the umbra with the ſpots, may be obſerved to a conſiderable degree of accuracy. The obſerver therefore ſhould have a good map of the moon at hand, that he may not miſtake. The teleſcope to obſerve a lunar eclipſe, ſhould have but a ſmall magnifying power with a great quantity of light. The ſhadow comes upon the moon on the eaſt ſide, and goes off on the weſt; but if the teleſcope invert, the appearance will be the contrary.

196. The eclipſes of jupiter's ſatellites afford the readieſt method of determining the longitude of places upon land. It was alſo hoped, that ſome method might be invented to obſerve them at ſea, and Mr. Irwin made a chair to ſwing for that purpoſe, for the obſerver to ſit in; but Dr. Maskelyne, in a voyage to *Barbadoes*, under the direction of the commiſſioners of longitude, found it totally impracticable to derive any benefit from it; and he obſerves, that "conſidering the great power requiſite in a teleſcope for making theſe obſervations well, and the violence as well as the irregularities of the motion of the ſhip, I am afraid the complete management of a teleſcope on ſhip board, will always remain among the deſiderata. However, I would not be underſtood to mean to diſcourage any attempt, founded on good principles, to get over the difficulty." The teleſcopes proper for making theſe obſervationss, are common refracting ones from 15 to 20 feet; reflecting ones of 18 inches or 2 feet; or the 46 inches achromatic. On account of the uncertainty of the theory of the ſatellites, Dr. Maskelyne adviſes the obſerver to be ſettled at his teleſcope, 3 minutes before the expected time of immerſion of the firſt ſatellite; 6′ or 8′ before that of the ſecond or third; and a quarter of an hour before that of the fourth. And if the longitude of the place be alſo uncertain, he muſt look out proportionably ſooner. Thus, if the longitude be uncertain to 2°, anſwering to 8 minutes of time, he muſt begin to look out 8 minutes ſooner than is mentioned above. However, when he has obſerved one eclipſe and found the error of the tables, he may allow the ſame correction to the calculations of the *Ephemeris* for ſeveral months, which will advertiſe him very nearly of the time of expecting the eclipſes of the ſame ſatellite, and diſpenſe with his attending ſo long. *Before* the oppoſition of jupiter to the ſun, the immerſions and emerſions happen on the *weſt* ſide of jupiter; and *after* oppoſition, on the *eaſt* ſide; but if the teleſcope invert, the appearance will be the contrary. *Before* oppoſition, the *immerſions* only of the firſt ſatellite are viſible; and *after* oppoſition, the *emerſions* only. The ſame is generally the caſe in reſpect to the ſecond ſatellite; but both immerſion and emerſion are frequently obſerved in the third and fourth.

197. When the obſerver is waiting for an emerſion, as ſoon as he ſuſpects that he ſees it, he ſhould look at his watch and note the ſecond; or begin to count the beats of the clock, till he is ſure it is the ſatellite, and then look at the clock and ſubtract the number of ſeconds which he has counted, and he will have the time of emerſion. If jupiter be 8° above the horizon, and the ſun as much below, an eclipſe will be viſible; this may be determined near enough by a common globe.

198. The emerſion or immerſion being obſerved according to apparent time, the longitude of the place from *Greenwich* is found, by taking the difference between that time and the time ſet down in the *Nautical Almanac*, which is calculated for *apparent* time.

Ex. Suppoſe the emerſion of a ſatellite to have been obſerved at the *Cape of Good Hope*, May 9, 1767, at 10h. 46′. 45″ apparent time; now the time in the *Nautical Almanac* is 9h. 33′. 12″; the difference of which times is 1h. 13′. 33″ the longitude of the Cape *eaſt* of Greenwich in time, or 18°. 23′. 15″.

199. But to find the longitude of a place from an obſervation of an eclipſe of a ſatellite, it is better to compare it with an obſervation made under ſome well-known meridian, than with the calculations in the *Ephemeris*, becauſe of the imperfection of the theory; but where a correſponding obſervation cannot be obtained, find what correction the calculations in the Ephemeris require, by the neareſt obſervations to the given time that can be obtained; and this correction applied to the calculation of the eclipſe in the *Ephemeris*, renders it almoſt equivalent to an actual obſervation. The obſerver muſt be careful to regulate his clock or watch to apparent time, or at leaſt to know the difference.

200. In order the better to know the difference of longitudes of two places, from correſponding obſervations, the obſerver ſhould be furniſhed with the *ſame* kind of teleſcopes. For at an immerſion, as the ſatellite enters the ſhadow, it grows fainter and fainter, till at laſt the quantity of light is ſo ſmall that it becomes

 inviſible,

inviſible, even before it is wholly immerſed in the ſhadow; the inſtant therefore that it becomes inviſible will depend upon the quantity of light which the teleſcope receives, and its magnifying power. The inſtant therefore of its appearance will be later, the better the teleſcope is; and the ſooner it will appear at its emerſion. Now the immerſion is the inſtant the ſatellite is got into the ſhadow, and the emerſion is the inſtant before it begins to emerge from the ſhadow; if therefore two teleſcopes ſhow the diſappearance or appearance of the ſatellite at the ſame diſtance of time from the immerſion or emerſion, the difference of the times will be the ſame as the difference of the true times of immerſion or emerſion, and therefore will ſhow the difference of longitudes accurately. But if the obſerved time at one place and the computed time at another be compared, we muſt allow for the difference of the apparent and true times of immerſion and emerſion, in order to get the true time where the obſervation was made, to compare with the true time from computation at the other place. This difference may be found, by obſerving an eclipſe at any place whoſe longitude is known, and comparing it with the time by computation. Obſervers, therefore, ſhould ſettle the difference by the mean of a great number of obſervations thus compared with the computations, by which means the longitude will be more accurately aſcertained. After all, however, the different ſtates of the air, and of the eye, will cauſe ſome uncertainty; but the latter may in a great meaſure be obviated, if the obſerver remove himſelf from all warmth and light, for a little time before he obſerves.

To find the Longitude by the Moon's Diſtance from the Sun, or a fixed Star.

201. The ſteps by which we find the longitude by this method, are theſe:

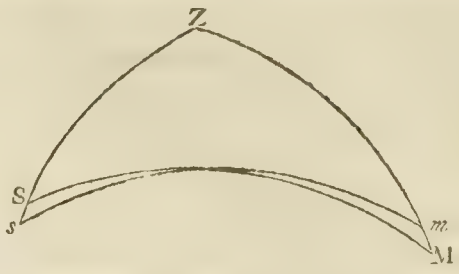
1. From the obſerved altitudes of the moon and the ſun, or a ſtar, and their *obſerved* diſtance, find their *true* diſtance.

2. From the *Nautical Almanac* find the apparent time at *Greenwich* when the moon was at that diſtance.

3. From the altitude of the ſun or ſtar, find the apparent time at the place of obſervation.

4. The difference of the times thus found, gives the difference of the longitudes, or the longitude from *Greenwich*.

We will here fully explain each of theſe.



Let *Z* be the zenith of the place of obſervation, *M* the apparent place of the moon, *m* its true place, *S* the apparent place of the ſun or ſtar, *s* the true place; then as the parallax of the moon depreſſes it more than refraction raiſes it, the apparent place *M* is below the true place *m*; but the ſtar is elevated by refraction and has no parallax to depreſs it, and the ſun is more elevated by refraction than depreſſed by parallax, therefore the true place *s* is below the apparent place *S*. Now the apparent altitudes being found by obſervation, we know the apparent zenith diſtances *ZM*, *ZS*; and knowing their apparent diſtance *MS*, we know the three ſides of the triangle *ZSM*; hence, we can find the angle *Z*. Now find from the tables the parallax and refraction of the moon, and their difference is *Mm*; do the ſame for the ſun, and we get *Ss*, or if it be a ſtar, the refraction gives *Ss*. From *ZM* ſubtract *Mm*, and we get *Zm*, and to *ZS* add *Ss*, and we get *Zs*; hence, in the triangle *Zsm*, we know *Zs*, *Zm*, and the angle *Z*, to find *sm* the *true* diſtance of the moon from the ſun or ſtar.

Example. Suppoſe on June 29, 1793, the ſun's apparent zenith diſtance *ZS* was obſerved to be 70°. 56′. 24″, the moon's apparent zenith diſtance *ZM* to be 48°. 53′. 58″, and their apparent diſtance *MS* to be 103°. 29′. 27″. Then the true diſtance *sm* being computed according to the above method, it is found to be 103°. 3′. 18″.

202. The true diſtance of the moon from the ſun being found, the next thing is to find from thence, the time at *Greenwich*. Now in the *Nautical Almanac* the true diſtance of the moon from the ſun or certain fixed ſtars, ſuch as lie in or near the moon's path, is put down for every three hours. The true diſtance therefore being known, look into the *Nautical Almanac*, and take out two diſtances, one greater and the other leſs than the known true diſtance as found above, and the difference *D* of theſe diſtances ſhows how much the moon approaches

approaches to or recedes from the ſun or ſtar, in three hours; and take the difference *d* between the moon's diſtance at the beginning of that interval, and the diſtance found from obſervation, and then ſay, *D : d ::* 3 hours : : the time the moon is acceding to or receding from the ſun or ſtar through the ſpace *d*, which added to the time at the beginning of the interval, gives the apparent time at *Greenwich*, correſponding to the true diſtance of the moon, as deduced from obſervation.

EXAMPLE. Taking the moon's true diſtance 103°. 3'. 18" on June 29, 1793, as deduced in the laſt example, to find the apparent time at Greenwich.

True diſtance of ☽ from ☉ - - -	103°.	3'.	18"
True diſtance on June 29, at 3h. by *Nautical Almanac* -	103.	4.	58
True diſtance on June 29, at 6h. by *Nautical Almanac* -	101.	26.	42
D = - - - - - - - -	1.	38.	16
d = - - - - - - - -	0.	1.	40

Hence, 1°. 38'. 16" : 0°. 1'. 40" :: 3h : oh. 3'. 3", which added to 3 hours gives 3h. 3'. 3" the apparent time at *Greenwich*.

203. The next thing to be done, is to find the time at the place of obſervation, knowing the ſun's declination, the latitude of the place, and the ſun's altitude.

EXAMPLE. The ſun's declination was 23°. 14'. 4", and its obſerved altitude was 19°. 3'. 36", and the latitude was 52°. 12'. 35'.

Now the refraction was 2'. 44", and the parallax 8"; hence, the true altitude was 19°. 1'; and by article 61, the apparent time is found to be June 28, 18h. 5'. 29".* Hence,

Apparent time at Greenwich, June 29 - - -	3h.	3'.	3"
Apparent time at place of obſervation, June 28 - -	18.	5.	29
Longitude of place of obſervation in time - . -	8.	57.	34

Which converted into degrees, gives 123°. 50'. 16", the *longitude* of the *place of obſervation* weſt of *Greenwich*.

204. Thus we have explained the regular ſteps by which the longitude is found by obſerving the moon's diſtance from the ſun, or a fixed ſtar; but for a full explanation, we refer the reader to Mr. VINCE's *Complete Syſtem of Aſtronomy*, in which work he will find all the various calculations explained at large; and where he will alſo ſee three other methods of finding the longitude; one, by a ſolar eclipſe; another, by an occultation of a fixed ſtar by the moon; and a third, by the moon's tranſit over the meridian, compared with that of a fixed ſtar. Theſe are of too difficult a nature to admit of a popular explanation.

205. The above method of finding the longitude by the moon, was brought into practice by DR. MASKELYNE, who proved the accuracy of it in two voyages, one to *St. Helena*, and the other to *Barbadoes*, by the following irrefragable proofs: 1ſt, On the near agreement of the longitude, inferred from obſervations made within a few days or hours of making land, with the known longitude of ſuch land. 2d, From the near agreement of the longitude of the ſhip from obſervations made on a great many different days near to one another, when connected by help of the common reckoning. 3d, From the near agreement of the longitude of the ſhip, deduced from obſervations of ſtars on different ſides of the moon, taken on the ſame night. For here all the moſt probable kinds of errors operating different ways, their effect, if any, muſt have appeared in the reſult. But in all the double longitudes thus found, their differences were ſo ſmall, as to warrant him to ſay, that by good inſtruments and careful obſervers, the longitude may be thus found to a very great degree of accuracy.

On the Uſe of the Globes.

206. There are two globes, one called the *terreſtrial*, upon which the places of the earth are delineated, and the other called *celeſtial*, upon which all the principal fixed ſtars are put down, and the figures of the conſtellations. The terreſtrial globe is a perfect map of the earth, repreſenting the relative ſituations of all the places upon its ſurface, with the true figures of all the different countries, which cannot be properly repreſented upon a map; and this renders a terreſtrial globe very neceſſary for the ſtudy of geography. The celeſtial globe ſerves to explain all the phænomena ariſing from the diurnal

* The aſtronomical day begins at noon, ſo that June 28, 18h. 5'. 29" is, according to the common reckoning, June 29, 6h. 5'. 29" in the morning.

motion of the earth about its axis, and alſo the variation of ſeaſons ariſing from its motion about the ſun, only ſuppoſing the ſun to move in the ecliptic inſtead of the earth, which will not alter any of the appearances. To each globe there is a circular, flat piece of wood, the plane of which paſſes through the center of the globe, on which are marked the days of the month, and correſponding to them the ſigns of the ecliptic, where the ſun is on thoſe days; the points of the compaſs are alſo put upon the ſame piece. This is called the *horizon*; at right angles to which, there is a circular piece of braſs, on which the globe hangs, called the *brazen meridian*; it is ſupported at the loweſt point on a roller, on which it turns in its own plane, and paſſes through the horizon in two grooves cut for that purpoſe; on this circle the globe is ſupported by the extremities of its axis; and the axis paſſes through the brazen meridian, and carries an index round with it over a circular plate which is divided into hours, &c. On each globe there are two circles, one repreſenting the *ecliptic*, with the characters of the ſigns upon it, and the other the *equator*. To each of theſe circles, on the celeſtial globe, ſecondaries are drawn to every 10 or 15 degrees; but on the terreſtrial globe, they are drawn only to the equator. There is alſo a flat piece of braſs, called the *quadrant of altitude*, which is occaſionally fixed to the brazen meridian in its zenith, by a nut, and the lower end is put between the globe and the horizon, and can be turned round to any point; it is divided into degrees, &c. by which the altitudes of objects above the horizon may be found, and their azimuths determined. From one point of the brazen meridian correſponding to the equator, the degrees begin, and are continued both ways up to 90° at each pole; but for the other ſemicircle of the brazen meridian, the degrees begin at the poles, and are continued up to 90° at the equator. On the horizon, the degrees begin at the eaſt and weſt points, and are continued both ways to 90°, or to the north and ſouth points. The ecliptic and equator begin their degrees at one of their interſections, called *aries*, and they are continued round the ſame way to 360°; alſo, the former is divided into, and marked with, the twelve ſigns; and the latter is divided from the ſame point, into 24 hours. Upon the foot of the globe there is often put a compaſs, by which the brazen meridian may be ſet north and ſouth.

On the Uſe of the TERRESTRIAL *Globe.*

207. *To find the Latitude of a Place.*

Bring the place under that ſemicircle of the brazen meridian where the diviſions begin at the equator, and obſerve what degree the place is under, and it is the latitude required.

208. *To rectify the Globe to the Latitude of a Place.*

Elevate the pole above the horizon till its altitude, obſerved on the brazen meridian, be equal to the latitude of the place, and it is then ſaid to be rectified to the latitude, and it ſo far ſtands right for the ſolution of all problems for that latitude.

209. *To find the Longitude of a Place from Greenwich.*

Bring the place to the graduated edge of the brazen meridian, and obſerve the point of the equator which lies under it, and the diſtance of that point from the point where the meridian of Greenwich cuts the equator, is the longitude required.

210. *Given the Latitude and Longitude of a Place, to find where the Place is.*

Bring the given degree of longitude to the brazen meridian, and then under the given degree of latitude upon that meridian, you have the place required.

211. *When it is Noon at any Place A, to find the Hour at any other Place B.*

Bring A to the meridian, and ſet the index to XII; then turn the globe till B comes under the meridian, and the index will ſhow the hour at B. If it be not noon at A, ſet the index to the hour, and proceed as before, and you get the correſponding hour at B.

212. *To find the Diſtance of A from B.*

Bring A to the meridian, and ſcrew the quadrant of altitude over it, and carry it to B, and you get the number of degrees between A and B, which multiply by 69,2, the miles in one degree, and you get the diſtance required.

213. *To find the Bearing of B from A.*

Rectify the globe for the latitude of A, and bring A to the meridian, and fix the quadrant of altitude to A; then direct the quadrant to B, and the point where it cuts the horizon ſhows the bearing required.

214. *At any Hour of the Day at B, to find the Place A to which the Sun is vertical.*

Find the ſun's place in the ecliptic, and bring it to the brazen meridian, and you find its declination on the meridian; then bring B to the meridian, and ſet the index to the given hour, and turn the globe till the index comes to XII at noon, and the place under the ſun's declination upon the meridian, is that required.

215. *To find, at any Day and Hour, the Places where the Sun is riſing, ſetting, or on the Meridian; alſo, thoſe Places which are enlightened, and where the Twilight is beginning and ending.*

Find (by art. 214.) the place to which the ſun is vertical at the given hour, and bring the ſame to the meridian, and rectify the globe to a latitude equal to the ſun's declination. Then to all thoſe places under the *weſtern* ſemicircle of the horizon, the ſun is *riſing*; to thoſe under the *eaſtern* ſemicircle, the ſun is *ſetting*; and to thoſe under the *meridian*, it is *noon*.

Alſo, all places above the horizon are enlightened, and all thoſe below are in the dark hemiſphere.

Laſtly, in all thoſe places 18° below the weſtern horizon, the twilight is juſt beginning in the morning, and in thoſe

thoſe 18° below the eaſtern horizon, it is juſt ending in the evening.

216. *To find all the Places to which a Lunar Eclipſe is viſible at any Inſtant.*

Find the place to which the ſun is vertical at any time, and bring that place to the zenith, and the eclipſe will be viſible to all the hemiſphere *under* the horizon, becauſe the moon is then oppoſite to the ſun.

On the Uſe of the CELESTIAL *Globe.*

217. *To find the Sun's right Aſcenſion and Declination.*

Bring the ſun's place in the ecliptic to the brazen meridian, and it points out upon the meridian, the declination; and the degree of the equator which is cut by the meridian, is the right aſcenſion.

218. *Given the right Aſcenſion and Declination of an heavenly Body, to find its Place.*

Bring the given degree of right aſcenſion on the equator, to the brazen meridian, and the degree of the meridian correſponding, to the declination, points out the place required.

219. *Given the Latitude of a Place, the Day and Hour, to find the Altitude and Amplitude of a given heavenly Body.*

Rectify the globe (by art. 208.) to the latitude of the place, and bring the ſun's place in the ecliptic to the brazen meridian, and ſet the index to XII; then turn the globe till the index points to the given hour, and in that poſition the globe repreſents the proper ſituation of all the heavenly bodies, in reſpect to the meridian and horizon. Then fix the quadrant of altitude to the zenith, and direct its graduated edge to the place of the body, and it ſhows the altitude of the body; and the degree where it cuts the horizon, ſhows its amplitude. If the body be the moon or a planet, after having found its place, you may put a ſmall patch to denote its place.

220. *Given as before, to ſet the Globe ſo that the Stars upon it may correſpond to their Situations in the Heavens.*

The globe being fixed as in the laſt article, by means of the compaſs let the braſs meridian be ſet in the meridian of the place, with the north pole to the north; then will all the ſtars upon the globe correſpond to their places in the heavens, ſo that an eye at the center of the globe would refer every ſtar on its ſurface to the place of the ſtar in the heavens. By comparing therefore the ſtars in the heavens with their places on the globe, you will eaſily get acquainted with the ſtars.

221. *To find the Time when any of the heavenly Bodies riſe, ſet, or come to the Meridian; alſo, their Azimuth at riſing or ſetting.*

Rectify the globe to the latitude of the place, and bring the ſun's place in the ecliptic to the meridian, and ſet the index to XII. as in art. 219. Then turn the globe till the given body comes to the eaſtern part of the horizon, and the index ſhows the time of its riſing; and the arc of the horizon between the body and the north or ſouth points, will give its azimuth. Bring the body to the meridian, and the index ſhows the time of its coming to it. Bring the body to the weſtern horizon, and the index ſhows the time of its ſetting; and the arc of the horizon between the body and the north or ſouth points, will give its azimuth. You may thus find the time of the ſun's riſing and ſetting. If you turn the globe about its axis, all thoſe ſtars which do not deſcend below the horizon, never ſet at that place; and thoſe which do not aſcend above it, never riſe.

222. *To explain, in general, the Alteration of the Lengths of the Days, and the Difference of the Seaſons.*

Put patches upon the ecliptic from aries both ways to the tropics, and let them repreſent ſo many different ſituations of the ſun; and then the globe being rectified to the latitude of the place (by art. 208.), turn it about and you will ſee, for *north* latitude, that as the patches approach the tropic of cancer, the correſponding diurnal arcs will increaſe; and as the patches approach the tropic of capricorn, the diurnal arcs will decreaſe; alſo, the former arcs are greater than a ſemicircle, and the latter leſs; and the patch in the equator will deſcribe a ſemicircle above the horizon. When therefore the ſun is in the equator, the days and nights are equal; as he advances towards the tropic of cancer, the days increaſe, and the nights decreaſe, till he comes to the tropic, where the days are found to be longeſt, and the nights ſhorteſt; then as he approaches the equator, the length of the days diminiſhes and that of the nights increaſes, and when the ſun comes to the equator, the lengths of the days and nights are equal. Then as he advances towards capricorn, the days continue to diminiſh and the nights increaſe till he comes to that tropic, where the days are ſhorteſt and the nights are longeſt; and then as he approaches the equator, the days increaſe and the nights diminiſh; and when he comes to the equator, the days and nights are equal. And whatever be the latitude, when the ſun is in the equator, days and nights are equal. To an inhabitant at the pole, the ſun will appear to be half a year above the horizon, and half a year below. To an inhabitant at the equator, the days and nights will appear to be always equal; alſo, all the heavenly bodies will be found to be as long above the horizon as below. At the arctic circle, the longeſt day will be found to be 24 hours, and the longeſt night 24 hours; this appears by rectifying the globe to that latitude, and obſerving the patches at the tropics of cancer and of capricorn. Laſtly, it will be found that all places enjoy equally the ſun in reſpect to time, and are equally deprived of it, the length of the days at one time of the year being found exactly equal to the length of the nights at the oppoſite ſeaſon. This appears by putting patches upon the ecliptic at oppoſite points of it.

223. *To find the Latitude and Longitude of a given Star; alſo, the Diſtance of two Stars.*

Bring the ſolſtitial colure to the meridian, and fix the quadrant of altitude over the pole of the ecliptic; then turn the quadrant over the given ſtar, and the arc contained

contained between the ſtar and the ecliptic will be the *latitude*, and the degree on the ecliptic cut by it will be the *longitude*. The diſtance of two ſtars may be found, by laying the quadrant of altitude over both, and counting the degrees between.

224. *To explain the Phænomena of the Harveſt Moon.*

Rectify the globe for any northern latitude, for inſtance, that of *London*; and as the moon's orbit makes but a ſmall angle with the ecliptic, let us ſuppoſe the ecliptic to repreſent the moon's orbit. Now, in September, when the ſun is in the beginning of *libra*, if the moon be then at its full, it muſt be in the beginning of *aries*; and as the mean motion of the moon is about 13° in a day, put a patch on the firſt point of aries, and another 13° beyond it on the ecliptic; bring the former patch to the horizon, and then turn the globe till the other comes to it, and the motion of the index will ſhow about 17′, which is the difference of times of the moon's riſing on two ſucceſſive nights, becauſe the earth muſt make ſo much more than a revolution in time, before it overtakes the moon the next night. This ſmall difference ariſes from the ſmall angle which the orbit of the moon makes with the horizon. If you continue patches at every 13° till you come to *libra*, you will find the difference of the times of riſing will increaſe up to that point, and there the difference will be about 1h. 17′; and this point of the ecliptic, when it riſes, makes the greateſt angle with the horizon. Hence, when the moon comes to the firſt point of aries, there will be the leaſt difference of the times of her riſing, and this happens at the time of the full moon, when the full moon happens about the 21ſt September. That point of the ecliptic which riſes at the leaſt angle with the horizon, will be found to ſet at the greateſt, and therefore when there is the leaſt difference in the times of riſing, there will be found to be the greateſt in the times of ſetting.

On the Diviſion of Time.

225. The revolution of the earth about the ſun divides time into aſtronomical *years*; the revolution of the moon about the earth divides it into aſtronomical *months*; and the rotation of the earth about its axis divides it into aſtronomical *days*; theſe, which are alſo called *natural* days, include a common day and night. Theſe natural days are ſubdivided by clocks into *hours*, *minutes*, and *ſeconds*. The firſt object in the regulation and diviſion of time, is to keep the ſame ſeaſons to the ſame months, ſo that the middle of ſummer may happen towards the end of June, and the middle of winter towards the end of December. But before the ſun's motion was tolerably well known, it was not eaſy to accompliſh this. Some of the ancients formed a *lunar* year, conſiſting of 12 ſynodic lunar months, or 354 days, at the end of which they made their year begin again. But finding that this year would not agree with the ſeaſons, to correct it, they firſt added a month every three years; afterwards, 3 months every eighth year; and laſtly, 8 months every 19 years. Theſe were called *luni-ſolar* years, and were uſed by the *Jews* and *Romans*. The *Egyptian* year conſiſted of 365 days; they had 12 months of 30 days each, and then they added 5 days more. The year which NUMA introduced amongſt the *Romans* was the luni-ſolar year, adding to the lunar year of 354 days, 22 days every two years, inſerting them as an intercalary month, after February every other year. But through the ignorance or negligence of the *Prieſts*, who had the care of theſe matters, the corrections, called intercalations, neceſſary for preſerving the agreement between the luni-ſolar year and the ſeaſons, were either omitted, or ſo improperly applied, as to produce great diſorders in the Roman calendar. Therefore JULIUS CÆSAR, to whom, when *Pontifex Maximus*, the care of theſe things belonged, reſolved to prevent, as far as he could, the like errors for the future. Accordingly, after having reſtored all the feſtivals to their proper ſeaſons, he, by the aſſiſtance of SOSIGENES, an aſtronomer of *Alexandria*, cauſed the old luni-ſolar year of NUMA to be entirely laid aſide, and ſubſtituted, inſtead thereof, the *Egyptian* ſolar year of 365 days, with the correction of an additional day every four years, it having been found that the true *tropical* year, by which the ſeaſons are governed, exceeds 365 days by ſix hours. This is called the *Julian* year. To add a day every fourth year, he cauſed the twenty-fourth day of February, which was the ſixth (ſextus) of the calends before March, to be reckoned twice. Hence this year was called *biſſextile*, and it is now called *leap-year*. In our calendar, this day is added every fourth year to the end of February. This civil year immediately came into uſe throughout all Europe.

226. But time ſhowed that this correction was not accurate; for it was found, that the equinoxes and ſolſtices happened earlier by ſome days than they did in former diſtant years; and more accurate obſervations of the ſun diſcovered that the true tropical year was not 365d. 6h. but 365d. 5h. 48′ 48″. The tropical year was therefore thought to be longer than it really was, by 11′. 12″, which in 129 years would amount to a whole day, and cauſe the equinoxes to fall ſooner by one day; and therefore the middle of ſummer and the middle of winter would fall one day ſooner. A further correction therefore became neceſſary.

227. Pope GREGORY XIII. therefore, ſet about the correction, from a deſire that the moveable feaſt of Eaſter ſhould happen as nearly as poſſible at the ſame times of the year reſpectively, with thoſe at which it had been kept for ſome years after the general council at *Nice*, which was holden in the year 325. But this could not be corrected without affecting the civil year in ſuch a manner, that the vernal equinox ſhould then, and at all future times, fall on, or as nearly poſſible to, March 21, as it did at that general council, but which had then anticipated 10 days. For this purpoſe, he cauſed 10 days to be dropped in October 1582, and by this means the vernal equinox was reſtored to March 21. And having conſulted with the aſtronomers, he ordered that three ſucceſſive centenary years, which, according to the *Julian*

lian account, would have been *biſſextiles*, ſhould be common years, but that every fourth centenary year ſhould be, as it otherwiſe would have been, a *biſſextile* year. By this means, the difference between the *civil* and *tropical* accounts for the ſpace of 400 years, will not differ ſo much as two hours, and will not amount to a whole day in leſs than 5082 years, at the end of which time it will be neceſſary to make a correction for this day. The civil year thus corrected, took place in moſt parts of *Europe* many years ago, but it did not take place in *England* till the year 1752, at which time a correction of 11 days was made, that being then neceſſary, and the *third* of September was called the *fourteenth*. This is called by us the *new ſtile*, and that in uſe before, or the *Julian* account, is called the *old ſtile*. As leap year happens every fourth year, and every hundredth year was a leap year in the *Julian* account, therefore every year which is diviſible by four, became a leap year. Now theſe centenary years, which, in the *Gregorian* account, are not to be leap years, are 1700, 1800, 1900, 2100, 2200, 2300, 2500, &c. Therefore as the year 1700 happened between the time of the correction by GREGORY, and that made by us, the *Gregorian* account had left out one day in that year which the *Julian* had not; therefore the *Gregorian* account, having, at the time it took place, left out 10 days, we were obliged to leave out 11 days, to bring our account to agree with that.*

228. Amongſt different nations, the *beginning* of the year varied, as well as the *length*. The *Jews* began their eccleſiaſtical year with the new moon of that month, whoſe full moon happened next after the vernal equinox. The *church of Rome* begin their year on the Sunday which falls on the ſaid full moon, or that happens next after it; or on Eaſter Sunday. The *Jews* began their *civil* year with the new moon which has its full moon happening next after the autumnal equinox. The *Grecians* began their year with the new moon which happened next after the ſummer ſolſtice. The *Romans*, according to PLUTARCH, began their year at March, from the time of ROMULUS to NUMA, who changed the beginning to January. ROMULUS made the year conſiſt of only ten months, as appears from the name of the laſt, *December*, or the tenth month; and that *March* was the firſt, is evident, becauſe they called the fifth from it *quintilis*, the ſixth *ſextilis*, and the reſt in their order. The firſt month of the *Egyptian* year began on our Auguſt 29. The *Arabic* and *Turkiſh* year began on July 16. The *ancient Clergy* made March 25, the beginning of the year.

229. The firſt diviſion of the civil year is into civil *months*, of which there are twelve. Theſe cannot be of an equal length, becauſe the number of days in a year is not diviſible by 12. There are therefore in every year, *ſeven* months of 31 days each, four of 30 days each, and in the common years *one* of 28 days, but which contains 29 in every leap year. Theſe are the months uſed for civil purpoſes. But the ſpace of 28 days is alſo called a month, and it is by the diviſion of this into four equal parts, that the year is ſubdivided into weeks, each conſiſting of ſeven days. Hence, a common year conſiſts of 13 of theſe months, or 52 weeks and 1 day, and a leap year of the ſame, and 2 days.

230. The days into which the civil year is divided, are called *natural*, and contain 24 hours. But there is a day called *artificial*, which is the time from ſun-riſe to ſun-ſet. The natural day is either *aſtronomical* or *civil*. The aſtronomical day begins at noon. The *Britiſh*, *French*, *Dutch*, *Germans*, *Spaniards*, *Portugueſe*, and *Egyptians*, begin the civil day at midnight; the ancient *Greeks*, *Jews*, *Bohemians*, and *Sileſians*, began it at ſun-ſetting, as do the modern *Italians* and *Chineſe*; and the ancient *Babylonians*, *Perſians*, *Syrians*, and modern *Greeks*, at ſun-riſing. The *Jews*, *Chaldeans*, and *Arabians*, divide the hour into 1080 equal parts, called *ſcruples*.

231. The points of time from which hiſtorians begin to reckon, are called *epochs*, or *æras*, and generally ariſe from ſome remarkable event. The firſt *æra* is the *Creation of the World*. Hiſtorians differ a little in their eſtimation of this time, making it from 3950 to 4000 years before CHRIST. The *æra* of the *Olympiads* is the moſt famous of the profane ones, which is placed 776 years before CHRIST, and this the *Romans* uſed. The *æra* of *Nabonaſſar* was 747 years before CHRIST, from which time the *Chaldeans* and *Egyptians* reckoned their years. The *æra* we uſe, is called the *Chriſtian æra*, becauſe it began at the birth of CHRIST; not indeed on the very day that he was born, which is reckoned on 25th of December, but 7 days after, on January 1ſt the next year. The *æra* of the *Julian* year was 45 years before this, when JULIUS CÆSAR rejected the old *Roman* year, and ordered the *Julian* year to be obſerved all over the Roman empire. The *Turkiſh æra* is the *Hegirâ*, or *flight of Mahomet*, 622, A. C. The *Perſian æra* is called *Yeſdegird*, 631 A. C.

232. But beſides the meaſures of time by *years*, &c. it was found convenient to introduce the uſe of *cycles*, that is, a circulation of time between the return of the ſame event. The *cycle of the ſun* is the ſpace of 28 years, in which time the days of the months return again to the ſame days of the week, and the ſun's place to the ſame degrees of the ecliptic on the ſame days, ſo as not to differ 1° in 100 years; and the leap years return again in reſpect to the days of the week on which the days of the month fall. Theſe things ariſe from hence: If 365 (the days in a common year) be divided by 7, there remains 1, which ſhows that the laſt day of the year is the ſame as the firſt, that is, if the firſt be on the Monday the laſt is on the Monday. Now it is cuſtomary to place againſt the ſeven days of the week, the firſt ſeven letters of the alphabet, A, B, C, D, E, F, G, placing A always againſt the firſt day of the year and therefore as they were continued through the year, the ſame letter A muſt ſtand againſt the laſt day. Hence, if the *firſt* of January be a *Sunday*, and A ſtands againſt it, A points out every Sunday in the year. But as the firſt

* As the year 1800 was a common year, there is now 12 days difference between the *new* and *old* ſtile.

firſt day of the next year is a *Monday*, againſt which A ſtands, G will ſtand againſt the firſt Sunday, and therefore againſt every Sunday in that year. For the ſame reaſon, the firſt day of the next year is *Tueſday*, and being marked with A, F will ſtand againſt every Sunday in the year, and ſo on. Therefore the *Sunday letters* will come on in an inverted order, A, G, F, E, D, C, B, in the ſucceſſive years; hence, theſe are called *dominical* letters. This would be the caſe, if there were no leap year or years, of 366 days; when this happens, the additional day thus taken is marked with the ſame letter, which neceſſarily throws the Sunday letter one letter back for the reſt of the year. Hence, in leap year there are two *dominical letters*, the firſt takes place before February 29, the ſecond after. As therefore the regular change of the Sunday letter which would be completed in 7 years, is thus interrupted every four years, the whole change will be completed in 7×4, or 28 years. But this will be ſometimes interrupted, becauſe every three centenary years out of four, are not leap years. The year of our Saviour's birth was the 9th of this cycle; therefore to find the year of this cycle, add nine to the given year, and divide the ſum by 28, and the quotient ſhows the number of cycles elapſed ſince his birth, and the remainder is the cycle for the year; if nothing remains, the cycle is 28.

233. The *cycle of the moon*, ſometimes called the *Metonic cycle* from the inventor *Meton*, is a period of 19 years, in which times, the conjunctions, oppoſitions, and all other aſpects of the moon, return on the ſame days of the month as they did 19 years before, but about $1\frac{1}{2}$ hour ſooner. The ancients formed this cycle thus: Taking any year for the cycle, they obſerved all the days on which the new moon happened through the year, and againſt each ſuch day they placed the number 1; in the ſecond year of the cycle they did the ſame, placing the number 2; and proceeded in like manner through the cycle of 19 years. This being done for one cycle, the ſame numbers were fitted to the calendar to ſhow the new moons in every future cycle; and on account of their great uſe, they were written in *gold*, and thence called *golden numbers*. But the difference of about $1\frac{1}{2}$ hour in 19 years increaſes to a whole day in about 312 years, ſo that this cycle can only hold for that time: for as the new and full moons anticipate a day in that time, the golden numbers ought to be placed one day earlier in the calendar for the next 312 years. It was thought proper, however, to make this correction at the end of whole centuries; accordingly they put the new moon forward one day at the end of every 300 years, for ſeven times ſucceſſively, which makes 2100 years; and to account for the odd $12\frac{1}{2}$ years, they deferred putting the moon forward to the end of 400 years, making the period of $8 \times 312\frac{1}{2} = 2500$ years. The golden numbers were properly placed by the council of *Nice*, A. D 325; the anticipation, which has been neglected ever ſince, is now become almoſt 5 days, and therefore all the golden numbers ought now to be placed 5 days higher in the calendar for the *old ſtile*, than they were at the above-mentioned council; or 6 days lower for the *new ſtile*. But becauſe the lunar cycle of 19 years ſometimes includes 4 and ſometimes 5 leap years, it is impoſſible to have a correct table of all the numbers, unleſs it be extended to 4×19, or 76 years. And in this caſe it muſt be adapted to the *old ſtile*, becauſe in every centenary year not diviſible by 4, the regular courſe of the leap year is interrupted in the *new ſtile*. The year of our Saviour's birth was the firſt year of the lunar circle; hence, to find at any time the cycle for the year, add one to the given year of CHRIST, and divide the ſum by 19, and the quotient is the number of cycles ſince the time of CHRIST, and the remainder is the cycle for the given year, or the *golden number*, and if nothing remain, 19 is the cycle.

234. The *epact* is the moon's age in days, at the beginning of the year. Let a new moon happen on January the 1ſt, then the epact is nothing. Now as 12 lunations are completed in 354 days, it is plain that the epact, or moon's age, would be 11 at the beginning of the ſecond year; 22 at the beginning of the third year; and 33 at the beginning of the fourth: but as one lunation is never more than $29\frac{1}{2}$ days, the epact muſt always be leſs than 30; therefore ſubtracting 30 from 33, there remains 3 for the epact for the fourth year. And by proceeding thus for 19 years, the epacts will ſtand thus: 0, 11, 22, 3, 14, 25, 6, 17, 28, 9, 20, 1, 12, 23, 4, 15, 26, 7, 18, 0; in the nineteenth year, the difference amounts to 29 days, and therefore the month which is ſubtracted muſt conſiſt only of 29 days, in order that the epact may begin again, as it muſt, the new moon falling on January 1ſt. Theſe epacts being placed againſt the days of the months in the calendar, on which the new moons fall in each year, anſwer the ſame purpoſe as the golden numbers. But it is liable to be interrupted every 310 years, for the ſame reaſon, the moon having then anticipated a whole day, and therefore on the firſt year of the cycle, the moon would be one day old on the firſt of January; therefore the epact would be increaſed by 1, and ſtand thus: 1, 12, 23, 4, &c. But this arrangement would be interrupted by the omiſſion of the leap year, every three centuries out of 4; for theſe years being a day leſs than by the *Julian* account, the new moons would happen a day later, and therefore make the epact 1 leſs. The moon's age here ſuppoſed is the *mean* new moon, that is, the new moon that would happen, if the moon moved uniformly with its mean velocity; but as the moon's motion is variable, the *true* new moon happens at a different time, and may ſometimes differ a day, that is, one may fall in one day, and the other in the next day. According to the rule therefore by which we find Eaſter, that feſtival is not always found to agree with the time deduced from the new moon, as put down in our almanacs, for there the time of the *true* new moon is put down; whereas, in the rule for finding Eaſter, the *mean* new moon is uſed. In the correction of the Britiſh calendar, we uſe the golden numbers, ommitting the epacts; and have placed the golden numbers, not againſt the days of the new moon,

but of the full moon, and only againſt the full moons in the paſchal months, March and April, in order to find Eaſter.

235. The *indiction* is a cycle of 15 years, and was uſed by the Romans for indicating the times of certain payments, made by the ſubjects to the republic, and was eſtabliſhed by CONSTANTINE in the year 312. Why it was confined to 15 years, or on what occaſion it was inſtituted, are not known. If we ſubtract 312 from the given year, and divide the remainder by 15, what remains is the indiction for the given year; and if nothing remain, the indiction is 15.

236. The *Cycle of Eaſter*, called the *Dionyſian Period*, is the product of the *ſolar* and *lunar* circles of 28 and 19 years=532 years. If the new moons did not anticipate upon this circle, as in art. 233, *Eaſter-day* would always be the Sunday next after the firſt full moon which follows March 21. But on account of that anticipation before the alteration of the ſtile, the *Eccleſiaſtical Eaſter* happened, within this century, a week different from the *true Eaſter*. But this is now remedied in the *Common Prayer-Book*, by making the table, which uſed to find *Eaſter for ever*, of no longer uſe than the lunar difference will admit of.

237. The *earlieſt* Eaſter is March 22, and the *lateſt* is April 25; for *Eaſter Sunday* is always the firſt Sunday after the full moon, which happens upon or next after March 21ſt. Within theſe limits there are 35 days, and the number belonging to each is called the *number of direction*.

On the Nature and Uſe of Maps.

238. A map is the repreſentation of the ſurface of the earth upon a plane; and theſe are either *general* or *particular*. A general map, is a map of the whole earth, and this is repreſented in two circles touching each other, repreſenting two hemiſpheres of the earth, the boundaries of which are meridians. A particular map, is a map of only a part of the ſurface of the earth, as of one of the quarters of the world, or of any particular country. The laying down of theſe maps is called *projection*, of which there are ſeveral kinds.

239. In maps, three principal things are required. 1ſt. To ſhow the latitude and longitude of places; and this is done by drawing a certain number of meridians, and parallels of latitude. 2d. The ſecond requiſite is, to exhibit, as nearly as you can, the ſhape of all the countries, for it cannot be done accurately by any projection, on account of its being made on a plane, when the earth is globular. 3d. The third is, to ſhow the bearings of places from each other, and their diſtances; the former can be done in one projection, but the latter cannot.

240. The projection of maps is made according to the rules of perſpective. If the eye be ſuppoſed to view the earth from an infinite diſtance, the appearance repreſented upon a plane is called an *orthographic* projection. In this caſe, the parts about the middle are very well repreſented, but the extreme parts are very much contracted. But the method generally made uſe of by geographers for maps, is the *ſtereographic*, where the eye is ſuppoſed to be on the ſurface of the earth, and looking at the oppoſite hemiſphere. There is alſo a projection called *globular*, in which meridians, equidiſtant upon the ſurface of the earth, are repreſented by equidiſtant circles in the map. There is alſo another projection, uſed by navigators, called *Mercator's*, in which, both the meridians and parallels of latitude are repreſented by ſtraight lines. Theſe are called *ſea charts*, wherein are exhibited ſome part of the ſea, with the ſhores that bound it: the inlands are generally omitted, as being of no uſe to the ſailor; but the parts near the ſhore are carefully laid down, with marks ſignifying rocks, ſands, or flats, and figures expreſſing the *ſoundings*, or depths of the water. The accurate method of conſtructing all kinds of maps, may be ſeen in the Treatiſe of Aſtronomy before referred to.

241. When we are to delineate a map of a *ſmall* part of the earth, if it be near the equator the meridians and parallels of latitude may be repreſented by equidiſtant ſtraight lines. If at ſome diſtance from the equator, the meridians muſt then be made to converge a little, and the more ſo, the further you recede from the equator.

242. When a map is made of a *very ſmall diſtrict*, as of a county, on whatever part of the earth it is, the meridians and parallels of latitude may be repreſented by equidiſtant parallel lines.

243. A line which cuts all the meridians at the ſame angle, is called a *rhumb* line; as long therefore as a ſhip ſails upon the ſame rhumb, it ſails upon the ſame point of the compaſs. When the projection of the meridians is by circles, then the rhumb line is a curve; but when the meridians are repreſented by ſtraight and parallel lines, the rhumb becomes a ſtraight line, it being the property of a ſtraight line to cut parallel ſtraight lines in the ſame angle.

244. Hence the great uſe of *Mercator's* Chart, which is conſtructed upon this principle. Upon the earth's ſurface, the degrees of latitude are all equal, but the degrees of longitude decreaſe as you approach the poles, as we have explained in art. 10. Now in this projection, the meridians being equidiſtant ſtraight lines, the degrees of longitude muſt be every where equal; in order therefore to preſerve the proper proportion between the degrees of longitude and latitude, the degrees of latitude are increaſed in a proper proportion; the degrees of latitude therefore increaſe as you go from the equator to the pole. Now in ſailing from one place to another, the ſhorteſt way is to ſail upon a great circle, but that is a thing which is impracticable, there being nothing to direct you in ſuch a courſe. Navigators therefore, when they have to go from one place A to another B, find upon what rhumb they muſt ſail, that is, upon what point of the compaſs they muſt go, ſo as to come to B, and by their ſteering compaſs they can tell when they ſail on the ſame point. Now on *Mercator's* projection, if you draw a ſtraight line from A to B, it gives you the rhumb required; for in theſe maps, there is a point aſſumed, and from it there are drawn 32

ſtraight lines to the 32 points of the compaſs; when therefore you draw the ſtraight line from A to B, you muſt obſerve to which of the 32 lines it is parallel, or to which it is neareſt ſo, and you thus get the rhumb, or the point of the compaſs you muſt continue to ſail upon, in order to go from A to B. For inſtance, if you find the line AB is parallel to the ſouth-weſt line of the compaſs, then if you continue to ſail on the ſouth-weſt point, you muſt come to B.

245. In all maps, the upper part is northern, the lower part ſouthern, the right hand ſide is eaſtern, and the left hand ſide is weſtern. On the right and left ſides, the degrees of *latitude* are marked; and on the top and bottom, the degrees of *longitude* are marked. When the maps are very large, the degrees may be ſubdivided into halves, quarters, &c.

246. When the meridians and parallels of latitude are *ſtraight and parallel lines*, the *latitude* of a place is found by ſtretching a thread over the place, ſo that it may cut the *ſame* degree of latitude on the right and left ſide of the map, and that degree is the latitude of the place. And to find the *longitude*, ſtretch a thread over the place, ſo that it may cut the *ſame* degree of longitude on the top and bottom, and that degree is the longitude of the place. For inſtance, if we take the chart of the Eaſt India iſlands, and ſtretch a ſtring over *Siam*, we ſhall find that it will cut each ſide at 14° N. lat. and the top and bottom at 10°. 10′ E. long. Theſe therefore are the latitude and longitude of that place.

247. On the contrary, if the latitude and longitude of a place be given to find the place, ſtretch one thread over the given degree of latitude on each ſide, and another thread over the given degree of longitude at the top and bottom; and at the interſection of the threads is the place required. By this means you may put down in a map, any place whoſe latitude and longitude are known.

248. Now let the meridians and parallels of latitude be *curve lines*. Then to find the *latitude* of a place, a parallel of latitude muſt be drawn through it, by the ſame rules as the other parallels are drawn, and it cuts the ſides at the degree of latitude of the place. And to find the *longitude*. of the place, draw a circle of longitude through it, by the ſame rules as the other circles are drawn, and it cuts the top and bottom at the degree of longitude of the place. But as it is troubleſome to draw theſe circles, the following method may generally be ſufficiently accurate. To find the *latitude*, find by a pair of compaſſes and a ſcale of equal parts, how far the place is from the two parallels between which it lies, and divide the diſtance of the parallels in that proportion, and you get very nearly the latitude. Suppoſe, for inſtance, the diſtance between the parallels to be 5°, and that one is a parallel of 45°, and the other of 50°; and ſuppoſe the place to be within 3 parts of the parallel of 45°, and 7 parts of the parallel of 50°; then 5° muſt be divided into 10 parts, and 3 of thoſe parts muſt be added to 45°, and it gives the latitude. This is done by proportion, thus, $3+7$, or $10 : 3 :: 5° : \frac{3\times 5°}{10} = \frac{15°}{10} = 1\frac{1}{2}°$; therefore the latitude is $46\frac{1}{2}°$ nearly. In the very ſame manner you may find the *longitude* nearly.

249. On the contrary, if the latitude and longitude of a place be given, to find the place, draw a circle of latitude through the given latitude on each ſide, and a circle of longitude through the given longitude at the top and bottom, and their interſection denotes the place. Or as you know between what two parallels of latitude and of longitude the place is, you know by what four lines it is bounded; and as you know the proportional diſtance from each line, you may eaſily, by trial, find the point.

250. When we undertake a voyage, we ought to be acquainted with the iſlands, rocks, ſands, ſtraits, rivers, &c. near which we are to ſail; the windings and the runnings out of the ſhores, &c. we ſhould alſo know the ſigns of being near land, which are, frequently, by the appearing of birds; the floating of weeds upon the ſea; the depth and colour of the water. Moreover, we ſhould know the times when the winds ſet in, particularly the trade winds or monſoons: the ſeaſons when ſtorms and hurricanes are to be expected, and the ſigns of their approach; the motions of currents; but more eſpecially of the tides. All theſe things are to be learned by good ſea-charts, and journals of voyages.

On the Mariner's Compaſs.

251. The earth poſſeſſes a ferruginous ſubſtance which has the property of attracting iron and ſteel only, and this ſubſtance is called a *natural magnet*, or *loadſtone*. The ſame property may alſo be communicated to iron and ſteel, and theſe are called *artificial magnets*.

252. If a piece of wire, or a needle be rendered magnetic, and be ſuſpended upon a fine point at its middle, ſo that it can freely turn in an horizontal plane, one end will always be directed towards the northern part of the horizon, and the other towards the ſouthern. The former end is called the *north pole*, and the latter end the *ſouth pole*. Theſe poles are not directed to the north and ſouth poles of the earth, but vary conſiderably from them, and differently in different places, and this is called the *variation of the compaſs*; and even in the ſame place, they are ſubject to a very ſmall gradual variation. The direction in which the magnet ſtands, is called the *magnetic meridian*.

253. The *mariner's compaſs*, or, as it is called, the *compaſs*, the *ſteering compaſs*, or the *needle*, conſiſts of three parts, the box, the card or fly, and the needle. The card is a circle of ſtiff paper repreſenting the horizon, with the 32 points of the compaſs marked upon it; the magnetic needle is fixed to the under ſide of this card; the centre of the needle is perforated, and a cap with a conical agate at its top is fixed in this perforation; this cap is hung on a ſteel pin, which is fixed to the bottom of

of the box, ſo that the card, hanging on the pin, turns freely round its centre, and the needle lies in the direction of the N. and S. points of the card, and therefore theſe points will always be directed to the *magnetic* north and ſouth points of the horizon, the needle fixing itſelf in the *magnetic* meridian. The box which contains the card and needle, is a circular braſs box, hung within another box by two concentric rings, called jimbals, ſo fixed by croſs centres to the two boxes, that the inner one ſhall retain a horizontal ſituation in all the motions of the ſhip. The top of the inner box has a cover of glaſs, to prevent the card from being diſturbed by the wind.

254. In order to determine the true point of the compaſs on which a ſhip ſails, it is neceſſary to know the *variation* of the compaſs at the place where you are, on which account, every means have been uſed to determine, by obſervation, what the variation is; and theſe obſervations have been put down in good ſea charts, for the uſe of navigators. Theſe however can ſerve but for a few years, on account of their being variable at the ſame place; nor has it been diſcovered how much the variation is ſubject to vary. The following table from Mr. CAVALLO's Treatiſe on Magnetiſm, contains the variation at the places and times therein inſerted, and upon many occaſions may be found very uſeful.

Latitude N.	Longitude W.	Variation E.	Years.
70°. 17′	163°. 24′	30°. 21′	1779
69. 38	164. 11	31. 0	1778
66. 36	167. 55	27. 50	
65. 43	170. 34	27. 58	
63. 58	165. 48	26. 25	
59. 39	149. 8	22. 54	
58. 14	139. 19	24. 40	
55. 12	135. 0	23. 29	
53. 37	134. 53	20. 32	
50. 8	4. 40	Variation W.	
48. 44	5. 0	20. 36	1776
40. 41	11. 10	22. 38	
33. 45	14. 50	22. 27	
31. 8	15. 30	18. 7	
28. 30	17. 0	17. 43	
23. 54	18. 20	14. 0	
		15. 4	
20°. 30′	20°. 3′	14°. 35′	
19. 45	20. 39	13. 11	
16. 37	22. 50	10. 33	
15. 25	23. 36	9. 15	
13. 32	23. 45	9. 25	
12. 21	23. 54	9. 48	
11. 51	24. 5	8. 19	
8. 55	22. 50	8. 58	
6. 29	20. 5	9. 44	
4. 23	21. 2	9. 1	
3. 45	22. 34	8. 27	
2. 40	24. 10	7. 42	
1. 14	26. 2	5. 35	
0. 51	27. 10	4. 59	
0. 7	27. 0	4. 27	
Latitude S.			
1. 13	28. 58	3. 12	

Latitude S.	Longitude W.	Variation W.	Years.
2.° 48′	29°. 37′	2°. 52′	1776
3. 37	30. 14	2. 14	
4. 22	30. 29	2. 54	
5. 0	31. 40	1. 26	
6. 0	32. 50	0. 6	
		Variation E.	
6. 45	33. 30	0. 35	
		Variation W.	
7. 50	34. 20	0. 7	
8. 43	34. 20	0. 15	
		Variation E.	
9. 1	34. 50	0. 44	
		Variation W.	
10°. 4′	34. 49	0. 38′	
		Variation E.	
12. 40	34. 49	1. 12	
13. 23	34. 49	1. 1	
14. 11	34. 49	1. 9	
15. 33	34. 40	1. 15	
16. 12	35. 20	2. 4	
18. 30	35. 50	3. 2	
20. 8	36. 1	5. 26	
21. 37	36. 9	3. 24	
24. 17	36. 8	3. 24	
26. 47	34. 27	3. 44	
28. 19	32. 20	1. 58	
30. 25	26. 28	2. 37	
		Variation W.	
33. 43	16. 30	4. 44	
35. 37	9. 30	5. 51	
38. 52	23. 20	22. 12	
	Longitude E.	Variation E.	
40. 36	173. 34	13. 47	
42. 4	167. 32	13. 17	
		Variation W.	
44. 52	155. 47	9. 28	
46. 15	144. 50	14. 48	
48. 41	69. 10	27. 39	

Variation

Variation obſerved at London at different Times.

Years.	Variation	
1576	11°. 15′	East.
1580	11. 11	
1612	6. 10	
1622	6. 0	
1633	4. 5	
1634	4. 5	
1657	0. 0	
1665	1. 22½	West.
1666	1. 35½	
1672	2. 30	
1683	4. 30	
1692	6. 0	
1700	8. 0	
1717	10. 42	
1724	11. 45	
1725	11. 56	
1730	13. 0	
1735	14. 16	
1740	15. 40	
1745	16. 53	
1750	17. 54	
1760	19. 12	
1765	20. 0	
1770	20. 35	
1774	21. 3	
1775	21. 30	

255. The preſent variation at London is about 24°, and is increaſing. The change of variation is not ſufficiently regular, ſo as to be able to aſcertain at any future time, what the variation will be.

256. The magnet is ſubject to a *daily* variation, which is affected by heat and cold, as appears by the following obſervations, made by Mr. CANTON.

The Variation obſerved at different Hours of the ſame Day, July 27, 1759.

	Hour.	Min.	Variation W.		Thermo.
Morning	0.	18	18°.	2′	62
	6.	4	18.	58	62
	8.	30	18.	55	65
	9.	2	18.	54	67
	10.	20	18.	57	69
	11.	40	19.	4	68½
Afternoon	0.	50	19.	9	70
	1.	38	19.	8	70
	3.	10	19.	8	68
	7.	20	18.	59	61
	9.	12	19.	6	59
	11.	40	18.	51	57½

The mean Variation for each Month in the Year.

January	7′.	8″
February	8.	58
March	11.	17
April	12.	26
May	13.	0
June	13.	21
July	13.	14
Auguſt	12.	19
September	11.	43
October	10.	36
November	8.	9
December	6.	58

By this table it appears, that the variation of the needle is greateſt in ſummer, and leaſt in winter.

257. Dr. HALLEY firſt publiſhed ſome variation charts, from obſervations made at the beginning of the preſent century. Another chart was afterwards formed by MOUNTAINE and DODSON, upon obſervations made in 1756. Theſe charts are thus conſtructed. On a general map of the world, mark down with dots, all the places in which the variation is the ſame, and then draw a line through all theſe points: thus, mark down with dots, every place which has 20° eaſt variation, and draw a line through all theſe dots, and you get the line of 20° eaſt variation. Where the dots are at a conſiderable diſtance, you muſt fill the ſpace up with a line which ſeems moſt to accord with the tendency of the line on each ſide. In Dr. HALLEY's chart, the line of no variation croſſes the meridian of *London*, at about the 55° of ſouth latitude; it then proceeds in an arched manner towards the weſt of the ſaid meridian, and increaſing its curvature as it advances into the northern hemiſphere, terminates at *Charles Town* in *North America*. In the *Indian* ſea, the lines of variation are very irregular.

258. The method of finding by the compaſs, the direction in which a ſhip ſails, is this: the compaſs is ſuſpended in the cabin, and you look horizontally over the compaſs in the direction of the ſhip's wake, by which you ſee the point of the compaſs denoting the direction of the wake, the oppoſite point to which, is the point to which you are ſailing, according to the compaſs; and knowing how much the compaſs varies, you can tell the true point of the horizon to which you are going.

259. If a magnet be ſuſpended by an horizontal axis, ſo that it can freely move in a vertical plane, it will not ſtand in an horizontal poſition, although the two ends be accurately balanced, but the north end of the magnet, in this part of the world, will incline towards the horizon, or *dip*, as it is called, and of courſe the ſouth pole will be elevated. An inſtrument thus conſtructed is called *a dipping needle*. As you approach the ſouthern parts of the earth, the dip will diminiſh, and at length the magnet will become horizontal; and proceeding more

more ſouthern, the ſouth end will dip. The following table ſhows the dip at the places and times there noted. By the dip, we mean the angle which the magnet makes with the horizon.

Latitude N.	Longitude E.	North End Dips.	Years.
53°. 55′	193°. 39′	69°. 10′	1778
49. 36	233. 10	72. 29	
	Longitude W.		1776
44. 5	8. 10	71. 34	
38. 53	12. 1	70. 30	
34. 57	14. 8	66. 12	
29. 18	16. 7	62. 17	
24. 24	18. 11	59. 0	
20. 47	19. 36	56. 15	
15. 8	23. 38	51. 0	
12. 1	23. 35	48. 26	
10. 0	22. 52	44. 12	
5. 2	20. 10	37. 25	
Latitude S.			
0. 3	27. 38	30 3	
4. 40	30. 34	22. 15	
7. 3	33. 21	17. 57	
11. 25	34. 24	9. 15	
	Longitude E.	South End Dips.	
16. 45	208. 12	29. 28	
19. 28	204. 11	41. 0	
21. 8	185. 0	39. 1	1777
35. 55	18. 20	45. 37	1774
41. 5	174. 13	63. 49	1777
45. 47	166. 18	70. 5	1773

260. In the ſame place, the dip is ſubject to a variation; it is now about 72° at *London*, and from the moſt accurate obſervations on the dipping needle belonging to the Royal Society, it appears to diminiſh about 15′ in 4 years. In going from north to ſouth, the dip does not alter regularly. As it is extremely difficult to balance the needle accurately, the poles of the needle are generally reverſed by a magnet, ſo that its two ends may dip alternately, and the mean of the two dips is taken.

261. A bar of iron which ſtands for ſome time in a vertical poſition, will acquire a degree of magnetiſm; from which, and the phænomena of the *compaſs* and *dipping needle*, there can be no doubt but that the cauſe exiſts in the earth. Dr. HALLEY ſuppoſed that the earth has within it a large magnetic globe (not fixed within to the external parts), having four magnetic poles, two fixed and two moveable, which will account for all the phænomena. This would make the variation ſubject to a conſtant law; whereas we find caſual changes which cannot be accounted for upon this hypotheſis. This the Doctor ſuppoſes may ariſe from an unequal and irregular diſtribution of the magnetic matter. The diſtribution alſo of the ferruginous matter in the ſhell, may cauſe ſome irregularities. The *Aurora Borealis* has been obſerved to have an effect upon the *needle*; and it is a remarkable circumſtance, that the magnetic meridian is directed to the centre of the aurora borealis. Mr. DALTON, in his *Meteorological Obſervations and Eſſays*, has deduced the following concluſions from his obſervations. 1ſt, When the *aurora* appears to riſe only about 5°, 10°, or 15°, above the horizon, the diſturbance of needle is very little, and often inſenſible. 2d, When it riſes up to the zenith, and paſſes it, there never fails to be a conſiderable diſturbance. 3d, This diſturbance conſiſts in an irregular oſcillation of the horizontal needle, to the eaſtward and weſtward of the mean daily poſition; and in this place *(Kendal)* the excurſions on each ſide are about half a degree. 4th, When the aurora ceaſes, or ſoon after, the needle returns to its former ſtation. It appears from hence, that there is ſomething magnetic in the higher parts of the atmoſphere.

262. Mr. DALTON has alſo given us the following obſervations reſpecting the effects which the *aurora borealis* has on the weather. Since the ſpring of 1787, there have been 227 *auroræ* obſerved at *Kendal* and *Keſwick*; 88 of the next ſucceeding days were *wet*, and 139 *fair*, at *Kendal*, now in the account of rain, the mean yearly number of *wet* days is 217, and of *fair* days 148; hence, the chances of any one day, taken at random,

dom, being *wet* or *fair*, are as thoſe numbers. But it appears that the proportion of *fair* days to *wet* ones ſucceeding the *auroræ*, is much greater than this general ratio of *fair* days to *wet* ones; the inference therefore is, that the appearance of the *aurora borealis* is a prognoſtication of *fair* weather.

263. It may perhaps be here objected, that as the *aurora* can only be ſeen in a clear atmoſphere, this circumſtance alone would render it probable that the next day would be fair; but upon examining the obſervations, it appears that the *aurora* not only favours the next day, but it alſo indicates that a ſeries of days to the number of 10 or 12 are likely to be fair.

Of 227 obſervations, 139 were followed by 1 or more fair days, 100 by 2 or more, &c. as under:

1	2	3	4	5	6	7	8	9	10	11	12
139	100	69	52	38	30	21	16	10	6	2	1

But according to the laws of chance, the ſeries ought to have been, if the aurora had no influence, as under:

1	2	3	4	5	6
92	38	15	6	2	1

From which it appears, that there ſhould not have been above 1 *aurora* out of 227 followed by 6 *fair* days; and yet, in fact, there were 30. The aurora is more frequently followed by *fair* weather in ſummer than in winter.

On Winds.

264. Wind is a current of air, and its direction is denominated from that point of the compaſs *from* which it comes. The principal, if not the only cauſe of winds, is a partial rarefaction of the air by heat. When the air is heated, it becomes rarer, and therefore aſcends; and the ſurrounding cold air ruſhing in to ſupply its place, forms a current in ſome one direction. Winds may be divided into *conſtant*, or thoſe which blow always in the ſame direction; *periodical*, or thoſe which blow half a year in one direction, and half a year in a contrary direction; theſe are called *monſoons;* and *variable*, which are ſubject to no rules. The two former are alſo called *trade winds*. We ſhall here give the principal phænomena of the winds, from Dr. HALLEY's account thereof in the *Phil. Tranſ.*

1ſt, In the *Atlantic* and *Pacific Ocean*, under the equator there is a conſtant eaſt wind.

2d, To about 28° on each ſide of the equator, the wind on the *north* ſide declines towards the *north eaſt*, and the more ſo, the further you recede from the equator; and on the *ſouth* ſide it declines in like manner towards the *ſouth eaſt*. The limits of theſe winds are greater in the *Atlantic Ocean*, on the *American*, than on the *African* ſide, extending in the former caſe to about 32°, and in the latter to about 28°. And this is true likewiſe to the ſouthward of the equinoctial; for near the *Cape of Good Hope*, the limits of the trade winds are 3° or 4° nearer the line than on the coaſt of *Braſil*.

3d, Towards the *Caribbee Iſlands*, the aforeſaid north-eaſt wind becomes more eaſterly, ſo as ſometimes to be eaſt, and ſometimes eaſt by ſouth, but moſt northwards of the eaſt, a point or two.

4th, On the coaſt of *Africa*, from the *Canaries* to about 10° N. latitude, the wind ſets in towards the north eaſt; then it becomes ſouth weſt, approaching more to the ſouth, as you approach the *Cape*. But away from the coaſts, the winds are perpetually between the ſouth and the eaſt; on the *African* ſide they are more ſoutherly; on the *Braſilian*, more eaſterly, ſo as to become almoſt due eaſt. Upon the coaſt of *Guinea*, they are ſubject to frequent calms, and violent ſudden guſts, called *tornados*, from all points of the compaſs.

5th, In the *Indian* Ocean, the winds are partly *conſtant*, and partly *periodical*. Between *Madagaſcar* and *New Holland*, from 10° to 30° latitude, the wind blows ſouth-eaſt by eaſt. During the months of *May*, *June*, *July*, *Auguſt*, *September*, *October*, the aforeſaid ſouth-eaſt winds extend to within 2° of the equator; then for the other ſix months, the contrary winds ſet in, and blow from 3° to 10° S. latitude. From 3° ſouth latitude over the *Arabian* and *Indian* ſeas and *Bay of Bengal*, from *Sumatra* to the coaſt of *Africa*, there is another *monſoon*, blowing from *October* to *April* on the north-eaſt point, and in the other half year from the oppoſite direction. Between *Madagaſcar* and *Africa*, a ſouth ſouth-weſt wind blows from *April* to *October*, which, as you go more northerly, becomes more weſterly, till it falls in with the weſt-ſouth-weſt winds; but the Doctor could not obtain a ſatisfactory account, how the winds are in the other half year. To the eaſtward of *Sumatra* and *Malacca*, on the north ſide of the equator along the coaſt of *Cambodia* and *China*, the *monſoons* blow, and change at the ſame time as before-mentioned; but their directions are more northerly and ſoutherly. Theſe winds reach to the *Philippine Iſlands* and to *Japan*. Between the ſame meridians, on the ſouth ſide of the equator, from *Sumatra* to *New Guinea*, the ſame monſoons are obſerved. The ſhifting of theſe winds is attended with great hurricanes.

265. The eaſt wind about the equator is thus explained. The ſun moving from eaſt to weſt, the point of greateſt rarefaction of the air, by the heat of the ſun, muſt move in the ſame direction; and the point of greateſt rarefaction following the ſun, the air muſt continually ruſh in from the eaſt, and make a conſtant eaſt wind.

266. The conſtant north-eaſt wind on the north ſide of the equator, and ſouth-eaſt wind on the ſouth ſide, may be thus accounted for. The air towards the poles being denſer than that at the equator, will continually ruſh towards the equator; but as the velocity of different parts of the earth's ſurface from its rotation, increaſes as you approach the equator, the air which is ruſhing from the north towards the equator will not continue upon the ſame meridian, but it will be left behind; that is, in reſpect to the earth's ſurface, it will have a motion from the eaſt, and theſe two motions combined, produce a north-

north-eaſt wind on the north ſide of the equator. And in like manner, there muſt be a ſouth-eaſt wind on the ſouth ſide. The air which is thus continually moving from the poles towards the equator, being rarefied when it comes there, aſcends to the top of the atmoſphere, and then returns back to the poles. This ſolution is given by Mr. HADLEY in the *Phil. Tranſ.* vol. 39.

267. The periodical winds are ſuppoſed to be owing to the courſe of the ſun northward and ſouthward of the equator. Dr. HALLEY explains them thus: "ſeeing that ſo great Continents do interpoſe and break the continuity of the Ocean, regard muſt be had to the nature of the ſoil, and the poſition of the high mountains, which I ſuppoſe the two principal cauſes of the ſeveral variations of the winds from the general rule: for if a country lying near the ſun prove, to be flat, ſandy, low land, ſuch as the *Deſarts of Libya* are uſually reported to be, the heat occaſioned by the reflection of the ſun's beams, and the retention thereof in the ſand, is incredible to thoſe that have never felt it; whereby the air being exceedingly rarefied, it is neceſſary that the cooler and more denſe air ſhould run thitherward to reſtore the equilibrium. This I take to be the cauſe, why near the coaſt of *Guinea*, the wind always ſets in upon the land, blowing weſterly inſtead of eaſterly, there being ſufficient reaſon to believe, that the inland parts of *Africa* are prodigiouſly hot, ſince the northern borders thereof were ſo intemperate, as to give the ancients cauſe to conclude, that all beyond the *tropic* was made uninhabitable by exceſs of heat. From the ſame cauſe it happens, that there are ſo conſtant calms in that part of the Ocean called the *Rains*. For this tract being placed in the middle, between the weſterly winds blowing on the coaſt of *Guinea*, and the eaſterly trade winds blowing to the weſtwards thereof, the tendency of the air here is indifferent to either, and ſo ſtands in equilibrio between both; and the weight of the incumbent atmoſphere being diminiſhed by the continual contrary winds blowing from hence, is the reaſon that the air here holds not the copious vapours which it receives, but lets them fall in ſo frequent rains.

268. As the cold and denſe air, by reaſon of its greater gravity, preſſes upon the hot and rarefied, 'tis demonſtrative that this latter muſt aſcend in a continual ſtream as faſt as it is rarefied, and that being aſcended, it muſt diſperſe itſelf to preſerve the equilibrium, that is, by a contrary current, the upper air muſt move from thoſe parts where the greateſt heat is: ſo by a kind of circulation, the N. E. trade wind below, will be attended with a S. W. above, and the S. E. below with a N. W. wind above. And that this is more than a bare conjecture, the almoſt inſtantaneous change of the wind to the oppoſite point, which is frequently found in paſſing the limits of the trade winds, ſeems to aſſure us; but that which above all confirms this hypotheſis, is this, that the phænomenon of the monſoons is, by this means, moſt eaſily ſolved, and without it, hardly explicable. Suppoſing therefore ſuch a circulation as above, 'tis to be conſidered, that to the northward of the *Indian Ocean* there is every where land within the uſual limits of the latitude of 30°, viz. *Arabia*, *Perſia*, *India*, &c. which for the ſame reaſon as the mediterranean parts of *Africa*, are ſubject to unſufferable heats when the ſun is to the north, paſſing nearly vertical, but yet are temperate enough when the ſun is removed towards the other tropic, becauſe of a ridge of mountains at ſome diſtance within the land, ſaid to be frequently in winter covered with ſnow, over which the air, as it paſſes, muſt needs be much chilled. Hence it comes to paſs, that the air coming, according to the general rule, out of the N. E. in the *Indian* Seas, is ſometimes hotter, ſometimes colder than that which, by this circulation, is returned out of S. W. as is clear from the times wherein theſe winds ſet in, viz. in *April*, when the ſun begins to warm thoſe countries to the north, the S. W. monſoon begins, and blows during the heats till *October*, when the ſun being retired, and all things growing colder northward, and the heat increaſing to the ſouth, the N. E. winds enter and blow all the winter till *April* again.

269. And it is undoubtedly from the ſame principle, that to the ſouthward of the equator, in part of the *Indian Ocean*, the N. W. winds ſucceed the S. E. when the ſun draws near the tropic of *Capricorn*. But I muſt confeſs, that in this latter occurs a difficulty not well to be accounted for, which is, why this change of the monſoons ſhould be any more in this Ocean, than in the ſame latitudes in the *Ethiopic*, where there is nothing more certain than a S. E. wind all the year.

270. 'Tis likewiſe very hard to conceive, why the limits of the trade winds ſhould be fixed about the 30ª of latitude all round the globe, and that they ſhould ſo ſeldom tranſgreſs or fall ſhort of thoſe bounds; as alſo, that in the *Indian* Sea, only the northern part ſhould be ſubject to the changeable monſoons, and in the ſouthern there ſhould be a conſtant S. E."

271. There may perhaps be ſome cauſes of theſe periodical winds, which we cannot ſee altogether a ſolution of; but if all the circumſtances of ſituation, heat, cold, &c. were known, there is no reaſon to doubt but that they might be accounted for from the principles here delivered.

272. Winds over the ſame place, at different altitudes, are found to blow in different directions; for we ſee clouds at different altitudes moving in different directions; and experiments with air balloons prove the ſame.

273. We may further obſerve in reſpect to the direction in which winds blow, that if a current ſet off in any one direction, north eaſt for inſtance, and move in a great circle, it will not continue to move on that point of the compaſs, becauſe a great circle will not meet all the meridians at the ſame angle. This circumſtance therefore ſhould enter into our conſideration, in eſtimating the direction of the wind. High mountains are alſo obſerved to change its direction. On the lake of *Geneva* there are only two winds, that is, either up or down the valley. And the like is known to happen at other ſuch places.

274. The *conſtant* and *periodical* winds blow only at ſea; at land, the wind is always *variable*.

275. Beſides the winds already mentioned, there are others called *land* and *ſea breezes*. The air over the land being hotter during the day than the air over the ſea, a current of air will ſet in from the ſea to the land by day; but the air over the ſea being hotter than that over the land at night, the current at night will be from the land to the ſea. This is very remarkable in iſlands ſituated between the tropics. Mr. CLARE exemplifies this, by the following experiment: In the middle of a veſſel of water, place a water-plate of warm water, the water in the veſſel repreſenting the ocean, and the plate, the iſland rarefying the air over it. Then hold a lighted candle over the cold water, and blow it out, and the ſmoke will move towards the plate. But if the plate be cold, and the ſurrounding fluid warm, the ſmoke will move in the contrary direction. The ſea breezes in the Weſt Indies begin to appear about 9 in the morning, in a fine black curl upon the water, approaching the ſhore; it increaſes gradually till noon, and dies away at 4 or 5 in the afternoon. About 6 in the evening it changes to a land breeze, which blows from the land to the ſea, and laſts till 8 in the morning.

276. DR. DERHAM, from repeated obſervations upon the motion of light downy feathers, found that the greateſt velocity of the wind was not above 60 miles in an hour. But Mr. BRICE juſtly obſerves, that ſuch experiments muſt be ſubject to great inaccuracy, as the feathers cannot proceed in a ſtraight line; he therefore eſtimates the velocity by means of the ſhadow of a cloud over the earth, by which he found, that in a great ſtorm, the wind moves 63 miles in an hour; when it blows a freſh gale, at the rate of 21 miles in an hour; and in a ſmall breeze, at the rate of about 10 miles in an hour: but this method takes for granted that the clouds move as faſt as the wind. It is probable that the velocity is ſomething more than is here ſtated. Mr. ROUSE makes the velocity of a hurricane which tears up trees, &c. to be 100 miles in an hour.

277. There are certain lakes which, at times, are agitated during a calm ſeaſon, by ſome unknown cauſe; and the phænomenon is called a *bottom wind*. Mr. DALTON, in his *Meteorological Obſervations*, informs us, that Mr. CROSTHWAITE has been pretty aſſiduous in procuring intelligence reſpecting theſe phænomena, and in obſerving any circumſtances which might lead to a diſcovery of the cauſe; but nothing has yet occurred to him, that promiſes to throw any light upon the ſubject.

Obſervations made on Derwent Lake.

1789.

April 30. From 8 A. M. till noon, the lake pretty much agitated.

Auguſt 9. At 8 A. M. the lake in very great agitation; white breakers on large waves, &c. without wind.

Auguſt 29. At 9 A. M. a ſmall bottom wind.

1790.

June 20. At 8 P. M a bottom wind on the lake.

October 11. At 8 P. M a bottom wind on the lake.

December 1. At 9 P. M. a ſtrong bottom wind on the lake.

1791.

October 28. At 1 P. M. a bottom wind; the water much agitated.

278. In many parts of the world, more particularly in the *Weſt Indies*, they are attacked by hurricanes; theſe happen there in the rainy ſeaſon, principally in the month of Auguſt; deſtroying all the produce of the ground; tearing up trees; blowing down buildings; and inundating large tracts of the country. They are ſudden and very violent ſtorms of wind, rain, thunder and lightning, attended with a great ſwelling of the ſea, and ſometimes with earthquakes. There are ſigns by which the inhabitants are warned of their approach. They come on either at the quarter, or at the full change of the moon. If they come on at the full change, then at the preceding change, the ſky is troubled, the ſun more red than uſual, there is a dead calm below, and the tops of the mountains are free from thoſe miſts which uſually hover about them. In the caverns of the earth, and in wells, you hear a hollow rumbling ſound, like the ruſhing of a great wind. At night, the ſtars ſeem much larger than uſual, and are ſurrounded with a ſort of burs; the north-weſt ſky has a black and menacing appearance; the ſea emits a ſtrong ſmell, and riſes into vaſt waves, often without any wind. The wind itſelf now forſakes its uſual eaſtern ſteady ſtream, and ſhifts about to the weſt, from whence it ſometimes, with intermiſſions, blows violently and irregularly for about 2 hours at a time.

279. The quality of air depends in a great meaſure upon the ſoil over which it paſſes. The ſandy deſerts of *Africa* and *Arabia*, give a burning heat and blaſting quality to the air paſſing over them. At *Goree*, in the river *Senegal*, there is an eaſterly wind from the inland parts, with which thoſe who are ſuddenly met by it in the face are ſcorched, as by a blaſt from a furnace. At *Falkland Iſlands* an extraordinary blaſting wind is felt, but its duration is ſeldom above 24 hours. It cuts down the herbage, as if fires had been made under them; the leaves are parched up and crumble into duſt; fowls are ſeized with cramps, and never recover; men are oppreſſed with a ſtopped perſpiration, heavineſs at the breaſt, and ſore throat, but they recover with proper care. But the moſt dreadful winds are thoſe at the deſarts near *Bagdad*, called the *ſamiel*, or *mortifying wind*. The camels perceive their approach, and are ſaid to make an unuſual noiſe, and cover their noſes in the ſand. To eſcape their effects, travellers throw themſelves as cloſe as poſſible on the ground, and wait till it has paſſed over, which is commonly in a few minutes. Thus ſome eſcape; but thoſe who die, have their limbs mortified. If this wind meet with a ſhower of rain, it is ſaid to be deprived of its noxious quality. It is alſo ſaid, that it

never paſſes the walls of the city. In *Italy* there is a wind called, by the *Italians*, *Sirocco*. It blows for ſeveral days, and its mean heat is about 112° of *Fahrenheit*'s thermometer. It is fatal to vegetation, and deſtructive to the inhabitants; depreſſing their ſpirits, and ſuſpending the powers of digeſtion; ſo that they who venture to eat a heavy ſupper whilſt theſe winds prevail are frequently found dead the next morning. It is felt with peculiar violence at *Palermo*, where the inhabitants ſhut their doors and windows; and where there are no ſhutters, they hang up wet blankets, and ſervants are employed to keep them wet. No body ventures out, if he can poſſibly avoid it.

280. Mr. Bruce, in relating the particulars of his journey acroſs the *deſarts of Africa*, mentions prodigious pillars of ſand, moving with great velocities. Eleven of them appeared at once, at the diſtance of about three miles from him; the greateſt diameter of the largeſt was eſtimated at ten feet. The ſame phænomenon appeared again within a few days after; more pillars in number, but leſs in ſize. They began immediately after ſun riſe, and his rays ſhining through them, gave them the appearance of pillars of fire.

281. There is a phænomenon called a *water ſpout*, hanging under a deep cloud, in the form of a cone with the vertex downwards; and under it the ſea boils up, and riſes in a conical form; theſe two cones ſometimes meet, and they generally begin to appear together; but ſometimes the boiling of the ſea appears firſt. The poſition of the cones is moſtly perpendicularly to the ſea, but ſometimes it is oblique; and ſometimes the ſpout is in the form of a curve. They frequently diſappear ſuddenly, and ſometimes they move for a conſiderable ſpace before they break. The form of the water ſpout is more properly that of a ſpeaking trumpet, the ſmaller end being downwards. Sometimes theſe water ſpouts appear at land. When they appear at ſea, and are approaching a ſhip, it is ſaid that the ſailors fire at them and break them; as it might be dangerous if they were to meet with a ſhip and break over it. It is with good reaſon ſuppoſed that this is an electrical phænomenon; for they generally appear in months which are ſubject to thunder ſtorms, and are commonly preceded, accompanied, or followed by lightning, rain, or hail. Flaſhes of light have been ſeen about them. But the moſt remarkable circumſtance is, that they have been diſperſed by preſenting to them ſharp pointed knives or ſwords. The analogy alſo between a water ſpout and electricity may be ſhown, by hanging a drop of water on the under ſide of a plate of braſs connected with the prime conductor, and placing a veſſel of water under, at a ſmall diſtance; then upon working the machine, the water will deſcend from the drop in a conical form, and the water in the veſſel will riſe up under it in the form of a cone; reſembling very accurately the water ſpout, and the aſcent of the water in the ſea under. If we therefore ſuppoſe the cloud to be ſtrongly charged with the electric matter, we have cauſe ſufficient to ſolve the phænomenon. This theory of water ſpouts is confirmed by one which Mr. Forster gives an account of in his voyage round the world. On the coaſt of *New Zealand*, he ſaw the water in a ſpace of 50 or 60 furlongs, move towards its centre, and there riſing into vapour, by the force of the whirling motion which it had, aſcended in a ſpiral form towards the clouds; directly over which the cloud deſcended in a gradually tapered long ſlender tube, which ſoon united with the aſcending ſpiral in a cylindrical form. The water was whirled upwards with great violence in a ſpiral, and appeared to leave a hollow ſpace in the middle; ſo that it ſeemed to form a hollow tube; and this was rendered probable, as it looked exactly like a hollow glaſs tube. After ſome time, the column became incurvated, and then broke, with the appearance of a flaſh of lightning.

282. *A whirlwind* is a wind which riſes ſuddenly; is extremely rapid and impetuous, taking up all light ſubſtance from the earth which it may meet with, and carrying them up in a ſpiral motion. Dr. Franklin ſuppoſes that a whirlwind and a water ſpout proceed from the ſame cauſe; and this opinion is ſtrengthened by the following circumſtances. They have each a progreſſive and circular motion; they uſually riſe after calms and great heats, and moſt frequently happen in warm latitudes; the wind blows every way both to the whirlwind and water ſpout; and a water ſpout has moved from the ſea to the land and produced all the effects of a whirlwind. They are both of them probably therefore the effects of the electrical fluid.

On the Barometer.

283 The *Barometer* is an inſtrument to meaſure the weight or preſſure of the atmoſphere, and is ſo well known, that it is unneceſſary here to deſcribe it. Suffice it to ſay, that the air in the glaſs tube is ſupported by the preſſure of the air upon the mercury in the baſon, in which the lower and open end of the tube is immerſed; and the ſpace in the tube above the mercury is a vacuum. When therefore the preſſure of the air is increaſed, the mercury muſt riſe in the tube; and when the preſſure is diminiſhed, the mercury muſt fall. Upon the level of the ſurface of the earth, the limits of the height of the mercury in the tube above the ſurface of the mercury in the baſon, is from 28 to 31 inches; a graduated ſcale is therefore placed againſt the tube from 28 to 31 inches, in order to aſcertain the height of the mercury in the tube. But thoſe barometers which are made to meaſure the heights of mountains, are graduated much lower; becauſe, as you aſcend in the atmoſphere, the mercury falls. When the mercury ſtands at the altitude of 30 inches, the preſſure of the air upon every ſquare inch of the earth's ſurface is about 15 lb. avoirdupoiſe. At any other altitude of the mercury, the preſſure will be in proportion to the altitude. Hence, if we take the ſurface of a middle-ſized man to be 14½ ſquare feet, when the air is lighteſt, its preſſure on him is 13, 2 tons, and when heavieſt it is 14, 3 tons; the difference of which is 2464 lb. This difference of preſſures muſt greatly affect us in

in reſpect to our animal functions, and therefore in reſpect to our health; more eſpecially when the change is ſudden. The preſſure of the air upon the whole ſurface of the earth, is about 7767029797356342 9 tons.

Dr. Halley's Account of the riſing and falling of the Mercury in a Barometer, upon the Change of Weather.

284. To account for the different heights of the mercury at ſeveral times, it will be neceſſary to enumerate ſome of the principal obſervations made upon the barometer.

1ſt, In calm weather, when the air is inclined to rain, the mercury is commonly low.

2dly, In ſerene, good, ſettled weather, the mercury is generally high.

3dly, Upon very great winds, though they be not accompanied with rain, the mercury ſinks loweſt of all, with relation to the point of the compaſs the wind blows upon.

4thly, The greateſt heights of the mercury, *cæteris paribus*, are found upon eaſterly and north-eaſterly winds.

5thly, In calm froſty weather, the mercury generally ſtands high.

6thly, After very great ſtorms of wind, when the quickſilver has been low, it generally riſes again very faſt.

7thly, The more northerly places have greater alterations of the barometer than the more ſoutherly.

8thly, Within the tropics, and near them, thoſe accounts we have had from others, and my own obſervations at *St. Helena*, make very little or no variation of the height of the mercury in all weathers.

285. Hence I conceive, that the principal cauſe of the riſe and fall of the mercury, is from the variable winds which are found in the temperate zones, and whoſe great inconſtancy here in England is moſt notorious.

286. A ſecond cauſe is the uncertain exhalation and precipitation of the vapours lodging in the air, whereby it comes to be at one time more crowded than another, and conſequently heavier; but this latter in a great meaſure depends upon the former. Now from theſe principles I ſhall endeavour to explicate the ſeveral phænomena of the barometer, taking them in the ſame order I laid them down.

1ſt, The mercury being low inclines it to rain, becauſe the air being light, the vapours are no longer ſupported thereby, being become ſpecifically heavier than the medium wherein they floated; ſo that they deſcend towards the earth, and in the fall meeting with other aqueous particles, they incorporate together and form little drops of rain. But the mercury's being at one time lower than at another, is the effect of two contrary winds blowing *from* the place where the barometer ſtands, whereby the air of that place is carried both ways from it, and conſequently the incumbent cylinder of air is diminiſhed, and accordingly the mercury ſinks. As for inſtance, if in the *German Ocean* it ſhould blow a gale of weſterly wind, and at the ſame time an eaſterly wind in the Iriſh Sea; or if in *France* it ſhould blow a northerly wind, and in *Scotland* a ſoutherly, it muſt be granted me that, that part of the atmoſphere impendant over *England* would thereby be exhauſted and attenuated, and the mercury would ſubſide, and the vapours which before floated in thoſe parts of the air of equal gravity with themſelves, would ſink to the earth.

2dly, The great height of the barometer is occaſioned by two contrary winds blowing *towards* the place of obſervation, whereby the air of other places is brought thither and accumulated; ſo that the incumbent cylinder of air being increaſed both in height and weight, the mercury preſſed thereby muſt needs riſe and ſtand high, as long as the winds continue ſo to blow; and then the air being ſpecifically heavier, the vapours are better ſuſpended, ſo that they have no inclination to precipitate and fall down in drops; which is the reaſon of the ſerene good weather, which attends the greater heights of the mercury.

3dly, The mercury ſinks the loweſt of all by the very rapid motion of the air in ſtorms of wind. For the tract, or region of the earth's ſurface, wherein theſe winds rage, not extending all round the globe, that ſtagnant air which is left behind, as likewiſe that on the ſides, cannot come in ſo faſt as to ſupply the evacuation made by ſo ſwift a current; ſo that the air muſt neceſſarily be attenuated when and where the ſaid winds continue to blow, and that more or leſs according to their violence; add to which, that the horizontal motion of the air being ſo quick as it is, may in all probability take off ſome part of the perpendicular preſſure thereof: and the great agitation of its particles is the reaſon why the vapours are diſſipated and do not condenſe into drops ſo as to form rain, otherwiſe the natural conſequence of the air's rarefaction.

4thly, The mercury ſtands the higheſt upon an eaſterly or north-eaſterly wind, becauſe in the great *Atlantic Ocean*, on this ſide the 35th degree of north latitude, the weſterly and ſouth-weſterly winds blow almoſt always trade, ſo that whenever here the wind comes up at eaſt and north-eaſt, it is ſure to be checked by a contrary gale as ſoon as it reaches the ocean; wherefore according to what is made out in our ſecond remark, the air muſt needs be heaped over this iſland, and conſequently the mercury muſt ſtand high, as often as theſe winds blow. This holds true in this country, but it is not a general rule for others where the winds are under different circumſtances; and I have ſometimes ſeen the mercury here as low as 29 inches, upon an eaſterly wind; but then it blew exceeding hard, and ſo comes to be accounted for by what was obſerved upon the third remark.

5thly, In calm froſty weather the mercury generally ſtands high, becauſe (as I conceive) it ſeldom freezes but when the wind comes out of the northern and north-eaſtern quarters, or at leaſt unleſs theſe winds blow at

no great diſtance off; for the northern parts of *Germany*, *Denmark*, *Sweden*, *Norway*, and all that tract from whence north-eaſtern winds come, are ſubject to almoſt continual froſt all the winter; and thereby the lower air is very much condenſed, and in that ſtate is brought hitherwards by thoſe winds, and being accumulated by the oppoſition of the weſterly wind blowing in the Ocean, the mercury muſt needs be preſſed to a more than ordinary height; and as a concurring cauſe, the ſhrinking of the lower parts of the air into leſſer room by cold, muſt needs cauſe a deſcent of the upper parts of the atmoſphere to reduce the cavity made by this contraction to an equilibrium.

6thly, After great ſtorms of wind, when the mercury has been very low, it generally riſes again very faſt. I once obſerved it to riſe 1½ inch in leſs than 6 hours, after a long continued ſtorm of ſouth-weſt wind. The reaſon is, becauſe the air being very much rarefied, by the great evacuations which ſuch continued ſtorms make thereof, the neighbouring air runs in more ſwiftly to bring it to an equilibrium; as we ſee water runs the faſter for having a great declivity.

7thly, The variations are greater in the more northerly places, as at *Stockholm* greater than at *Paris* (compared by Mr. Paschall), becauſe the more northerly places have uſually greater ſtorms of wind than the more ſoutherly, whereby the mercury ſhould ſink lower in that extreme; and then the northerly winds bringing the condenſed and ponderous air from the neighbourhood of the pole, and that again being checked by a ſouthern wind at no great diſtance, and ſo heaped, muſt of neceſſity make the mercury in ſuch caſe ſtand higher in the other extreme.

8thly, Laſtly, this remark, that there is little or no variation near the equinoctial, as at *Barbadoes* and *St. Helena*, does above all things confirm the hypotheſis of the variable winds being the cauſe of theſe variations of the height of the mercury; for in the places abovenamed, there is always an eaſy gale of wind blowing nearly upon the ſame point, viz. E. N. E. at *Barbadoes*, and E. S. E. at *St. Helena*, ſo that there being no contrary currents of the air to exhauſt or accumulate it, the atmoſphere continues much in the ſame ſtate: however, upon hurricanes (the moſt violent of ſtorms) the mercury has been obſerved very low, but this is but once in two or three years, and it ſoon recovers its ſettled ſtate of about 29½ inches.

287. The principal objection againſt this doctrine is, that I ſuppoſe the air ſometimes to move *from* thoſe parts where it is already evacuated below the equilibrium, and ſometimes again *towards* thoſe parts where it is condenſed and crowded above the mean ſtate, which may be thought contrary to the laws of Statics, and the rules of the equilibrium of fluids. But thoſe who ſhall conſider how when once an impetus is given to a fluid body, it is capable of mounting above its level, and checking others that have a contrary tendency to deſcend by their own gravity, will no longer regard this as a material obſtacle; but will rather conclude, that the great analogy there is between the riſing and falling of the water upon the flux and reflux of the ſea, and this of accumulating and extenuating the air, is a great argument for the truth of the hypotheſis. For as the ſea, over againſt the coaſt of *Eſſex*, riſes and ſwells by the meeting of the two contrary tides of flood, whereof the one comes from the S.W. along the channel of England, and the other from the north; and on the contrary, ſinks below the level upon the retreat of the waters both ways, in the tide of ebb; ſo it is very probable, that the air may ebb and flow after the ſame manner; but by reaſon of the diverſity of cauſes whereby the air may be ſet in moving, the times of theſe fluxes and refluxes thereof are purely caſual, and not reducible to any rule, as are the motions of the ſea, depending wholly upon the regular courſe of the moon. Thus far Dr. Halley.

288. The following rules are given for judging of the weather by Mr. Patrick, and are eſteemed the beſt which we have.

1. The riſing of the mercury preſages, in general, fair weather; and its falling, foul weather; as rain, ſnow, high winds, and ſtorms.

2. In very hot weather, the falling of the mercury indicates thunder.

3. In winter, the riſing indicates froſt: and in froſty weather, if the mercury fall 3 or 4 diviſions, there will follow a thaw. But in a continued froſt, if the mercury riſe, it will ſnow.

4. When foul weather happens ſoon after the falling of the mercury, expect but little of it; and on the contrary, expect but little fair weather, when it proves fair ſhortly after the mercury has riſen.

5. In foul weather when the mercury riſes much and high, and ſo continues for 2 or 3 days before the foul weather is quite over, then expect a continuance of fair weather to follow.

6. In fair weather when the mercury falls much and low, and thus continues for 2 or 3 days before the rain comes, then expect a great deal of wet, and probably high winds.

7. The unſettled motion of the mercury, denotes uncertain and changeable weather.

8. You are not ſo ſtrictly to obſerve the words on the plate, though in general the weather agrees with them: For if the mercury ſtand at *much rain* and then riſe to *changeable*, it denotes fair weather, though not to continue ſo long as if the mercury had riſen higher. And on the contrary, if the mercury ſtand at *fair* and fall to *changeable*, it denotes foul weather, though not ſo much as if it had ſunk lower.

289. The following rules are uſeful to judge when the mercury is riſing or falling.

1. If the ſurface of the mercury be convex, it is riſing.

2. If the ſurface of the mercury be concave, it is falling.

3. If the *middle* of the mercury be plain, it is neither riſing nor falling; for mercury put into a glaſs tube, will naturally

naturally have the parts adjacent to the tube convex.

4. As the mercury will adhere a little to the tube, before you note its height it is proper to ſhake the barometer a little, by giving it a little tap with the knuckle.

On the Thermometer.

290. A *Thermometer* is an inſtrument to meaſure different degrees of heat. It is a ſmall glaſs tube with a bulb at the bottom, having the bulb and part of the tube filled with mercury, or ſpirits of wine. The tube is cloſed at the top, and the part not occupied by the fluid is a vacuum. Againſt the tube there is a ſcale to meaſure the expanſion of the fluid under different temperatures; for fluids expand by heat, and contract by cold. An increaſe of temperature will therefore make the fluid riſe in the tube, and a decreaſe of temperature will make it fall.

291. The thermometer now in uſe is that which is conſtructed by FAHRENHEIT. On this ſcale, the fluid ſtands at 32 when it juſt begins to freeze, and at 212 when put into boiling water; at temperate it ſtands at 55; at ſummer heat, at 76; at blood heat, at 98. If the ſcale be continued to 600, it gives the heat of boiling mercury; and if it be continued downwards to 39 below 0, it gives a degree of cold which will freeze mercury.

292. By means of the barometer and thermometer, the altitude of a mountain may be found to a great degree of accuracy. The following is the rule given by DR. MASKELYNE in his introduction to TAYLOR'S Logarithms; being the mean between thoſe given by General ROY and Sir GEORGE SHUCKBURGH.

293. Given the altitudes of the barometer at two ſtations, with the heights of Fahrenheit's thermometer *attached* to the barometer, and the heights of two *detached* thermometers of the ſame kind, expoſed to the air but ſheltered from the ſun at the two ſtations, to find the perpendicular altitude of one ſtation above the other.

RULE. Put H for the obſerved height of the barometer at the lower ſtation, and h for that at the upper ſtation, D for the difference of heights of FAHRENHEIT'S thermometer *attached* to the barometer at the two ſtations, and m for the mean of the two heights of the two *detached* thermometers expoſed freely for a few minutes to the open air in the ſhade, at the two ſtations; then the altitude of the upper ſtation above the lower, in Engliſh fathoms, is thus expreſſed:

$$(\text{Log. } H - \log. h \mp 0{,}454\, D) \times (1 + \overline{m - 32^\circ} \times 0{,}00244.)$$

Where the upper ſign — is to be uſed, when the thermometer *attached* to the barometer is higheſt at the lower ſtation (which is moſt uſual, and the lower ſign +, when it is loweſt at the lower ſtation.

But to render the rule more generally uſeful, we ſhall put it down in common language.

RULE. Take the difference of the common logarithms of the obſerved heights of the barometers at the two ſtations, conſidering the firſt four figures, excluſive of the index, as whole numbers, and the remaining figures to the right as decimals, and *ſubtract* or *add* 0,454 multiplied by the difference of altitudes of FAHRENHEIT'S thermometer *attached* to the barometer at the two ſtations, according as it was higheſt at the *lower* or *upper* ſtation; and this is nearly the required height. Then multiply the height thus nearly found, by the difference between the mean of the two altitudes of the two *detached* thermometers expoſed to the air at the two ſtations, and 32°, and again that product by 0,0 244, and the laſt product will be the correction of the altitude before nearly found; which *added* to or *ſubtracted* from the ſame, according as the mean of the two altitudes of the *detached* thermometers expoſed to the air, was *higher* or *lower* than 32°, will give the true height of the upper ſtation above the lower, in Engliſh fathoms; and this multiplied by 6, gives the true altitude in Engliſh feet.

EX. Let the ſtate of the barometers and thermometers be as follows; to find the altitude of one ſtation above the other.

Barometers.	Thermometers.	
	attached.	*detached.*
Lower 30,16	59	58
Upper 24,19	47	42
	12 dif.	50 mean.

	Log.
30,16 - - - -	14794,313
24,19 - - - -	13836,359
	957,954
Subtract - -	5,448 = 0,454 × 12
Altitude nearly - -	952,506
	18 = 50—32
	7620048
	952506
	17145,108
	0,00244
	68580432
	68580432
	342902.6
Cor. add - - -	41,834c6352
Alt. nearly - - -	952,506
True Alt. in - -	994,340 fathoms 6
	5966,04 feet

For heights which do not exceed 4000 or 5000 feet, Sir G. SHUCKBURGH gives the following rule:

Let A = the mean height of the two barometers in inches; a = the difference of the two in tenths of an inch; b = the number of feet in the table, corresponding to the *mean* height of the two thermometers; x = the height of the mountain in feet; then $x = \frac{30ab}{A}$

Ther.	Feet
32°	86,85
35	87,49
40	88,54
45	89,60
50	90,66
55	91,72
60	92,77
65	93,82
70	94,88
75	95,93
80	96,99

Ex. Suppose the barometer at the bottom to be 29,72 inches, thermometer 64°; the barometer at the top to be 27,46, thermometer 58°; to find the altitude of the mountain.

Here A = 28,59 inches; a = 22,6; the mean heat of the two thermometers = 61, the proportional number corresponding to which found from the table is 92,98 = b; hence $x = \frac{30 \times 22{,}6 \times 92{,}98}{28{,}59} = 2205$ feet the height required.

294. The mean height of the barometer in London, from observations made at the Royal Society, is 29,88 inches; and the mean temperature, according to FAHRENHEIT's thermometer, is 58°. The mean height at the surface of the sea is 30,54 inches, the heat of the barometer being 55°, and that of the air 62°, according to Sir GEORGE SHUCKBURGH

295. The heights of some of the most remarkable mountains in English feet.

	Feet
Snowden	3555
Mod Eilio	2371
Schihallien, west summit of	3281
Kirk Yetton Cairn	1544
Skiddaw	3240
Helvellyn	3300
Monte Rosa	15084
Montblanc	14432
Argentiere	12172
Buet	8894
Mole	4883
Dole	4293
Salcor	3284
Mont Cenis, at the Post	5031
Monte Velino	8397
Vesuvius	3938

Ætna

	Feet
Ætna	10954
Teneriff	11022
Monte Viſo	9997
Hecla, in Iceland	4903
Table Hill, weſt Signal	3468
Pico Ruivo	5 41
Carabourou	7840
Canigou	9214
Quito	9374
Pichincha	15564
El Coracon	15783
Coraçon	15833
Chimboraco	20575

The heights of Snowden and Moel Eilio are above Carnarven Quay. The height of Schihallien is above Weem. The height of Kirk Yetton is above Leith Pier head. The height of Skiddaw is above Derwent Lake, and of Helvellyn above Leathes Lake. The heights of Montblanc, Argentiere, Buet, Mole, Dole, Saleor, and Mont Cenis, are above the Lake of Geneva. The heights of the other mountains are above the Sea. The Lake of Geneva is 1228 feet above the Mediterranean Sea, and its greateſt depth is 393 feet.

On the Rain-gage.

296. The *Rain gage* is an inſtrument to ſhow the quantity of rain which falls upon the earth at any place where you may wiſh to make obſervations. It conſiſts of a funnel communicating with a cylindrical tube at its bottom, into which the rain is conveyed by the funnel. The depth of the water in the cylinder is meaſured by a rule fixed to a float, the rule paſſing through the center of the funnel. The diviſions on the rule ſhow the number of cubic inches of water that have fallen on a ſurface equal to the area of the top of the funnel. The funnel is ſo contrived as to prevent the water from evaporating.

297. To uſe the rain gage, ſo much water muſt firſt be put into the cylinder as will raiſe the float, ſo that 0 on the rule may exactly coincide with the aperture of the funnel. The gage ſhould be firmly fixed in a place, where, whatever winds blow, the fall of the rain may not be intercepted by any obſtacles. By this inſtrument, the mean *annual* depths of rain in inches at the places below, has been determined.

	Inches
London	21,4
Paris	19,6
Piſa in Italy	43,25
Zurich, Switzerland	32,25
Liſle, Flanders	24,0
Upminiſter, Eſſex	19,19
Townley, Lancaſhire	42,5
Kendal	64,5
Keſwick	68,55

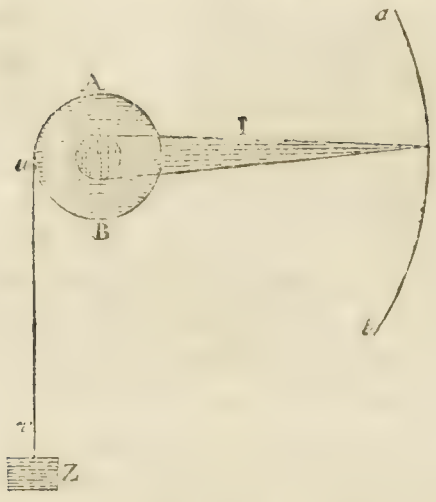
Mr. DALTON informs us, that the greateſt quantity of rain at *Kendal* in 24 hours, in five years, 1788, 1789, 1790, 1791, 1792, was on the 22d of April, 1792, 4,592 inches; at *Keſwick*, ſomething leſs. In the level parts of this kingdom, and in the neighbourhood of London, the mean annual depth of rain is about 19 or 20 inches.

298. It appears that the moſt rain falls in places near the ſea coaſt, and leſs and leſs as the places become more inland. The quantity which falls on the *weſtern coaſt* of *England* is ſometimes twice as much as falls at *London*. It is alſo found, that the nearer the inſtrument is to the ground, the more rain it collects. By experiments made by Dr. H. BERDEN, from July 1766 to July 1767, the following reſults were obtained: On the top of Weſtminſter Abbey there fell 12,099 inches; on the top of a houſe, 18,139 inches; at the bottom of the houſe, 22,608 inches; theſe are the mean annual quantities. Mr. BARRINGTON placed two rain-gages, one upon *Mount Renning* in *Wales*, and the other on the plain below; and from July to November there fell at the upper gage 8,265 inches, and at the lower 8,766 inches. Hence it appears, that the quantity of rain depends upon the nearneſs of the place to the earth, and not on the height of the place. In comparing therefore the quantity of rain at two places by two rain-gages, they ſhould be placed at the ſame diſtance from the earth.

On the Hygrometer.

299. The *Hygrometer* is an inſtrument to meaſure the moiſture and dryneſs of the air: and is formed of ſubſtances which will expand or contract upon any alteration of moiſture. Wood expands by moiſture and contracts by dryneſs; on the contrary, chord, catgut, &c. contract by moiſture and expand by dryneſs; and various mechanical contrivances have been invented, to render ſenſible the ſmalleſt variations in the lengths of theſe ſubſtances. We will deſcribe one of them, which any perſon may very eaſily make for himſelf.

Let



Let AB repreſent the ſection of a cylinder moveable about its axis, which is parallel to the horizon; at the end there is an index *I* moveable againſt a graduated arc *ab*; about this cylinder ſome catgut *vw* is wound, one end of which is fixed to the cylinder, and the other end to ſomething immoveable at *Z*. Now as the moiſture of the air increaſes, the catgut contracts and turns the cylinder, and the motion of the index ſhows the increaſe of the moiſture; and as the air decreaſes in moiſture, the catgut will lengthen, and the weight of the index will carry the cylinder back, and the index will ſhow the correſponding decreaſe of moiſture.

300. In order to make a perfect hygrometer, ſuch ſubſtances muſt be uſed that will contract or expand in proportion to the quantity of moiſture received. Mr. De Luc has made a great many experiments in order to find out ſuch ſubſtances; and the reſult is, that whalebone and box, cut acroſs the fibres, increaſe very nearly in proportion to the quantity of moiſture received. He preferred the whalebone, firſt, on account of its ſteadineſs, in always coming to the ſame point at extreme moiſture; ſecondly, on account of its greater expanſion, it increaſing in length above one eighth of itſelf, from extreme dryneſs to extreme moiſture; laſtly, it is more eaſily made thin and narrow.

301. De Sauſſure and De Luc have proved by the hygrometer, that the air increaſes in dryneſs as you aſcend in the atmoſphere; ſo that in the upper attainable regions, it is conſtantly very dry, except in the clouds. The former gentleman has alſo ſhown, that if the whole atmoſphere paſſed from extreme dryneſs to extreme moiſture, the quantity of water thus evaporated would not raiſe the barometer half an inch. Laſtly, in chemical operations on the air, the greateſt quantity of evaporated water that may be ſuppoſed in them at the common temperature of the atmoſphere, even if they were at extreme moiſture, is not ſo much as the one hundredth part of their maſs.

On the Aſcent of Vapours, the Origin of Springs, and Formation of Rain, Snow and Hail.

302. Vapours are raiſed from the ſurface of the moiſt earth and waters; the principal cauſe of which is, probably, the heat of the ſun, the evaporation being always greateſt when the heat is greateſt. The difficulty of ſolving the phænomenon ariſes from hence, that we find a heavier fluid (water) ſuſpended in a lighter fluid (air), contrary to the common principles of hydroſtatics.

303. Dr. Halley ſuppoſed, that by the action of the ſun upon the ſurface of the water, the aqueous particles become formed into hollow bubbles filled with warm and rarefied air, ſo as to make the whole bulk ſpecifically lighter than air, in which caſe the particles will aſcend. But there is great difficulty in conceiving how this can be effected. And if bubbles could be *at firſt* thus formed, when they aſcend, the air within would ſoon be reduced to the ſame temperature of the air without, on which account they would immediately deſcend. The moſt probable ſuppoſition is, that evaporation is a chemical ſolution of water in air. We know that metals are diſſolved in menſtruums, and their particles diffuſed and ſuſpended in the fluid, although their ſpecific gravity be greater than that of the fluid. Heat promotes this ſolution; in the day time therefore the heat cauſes a more perfect ſolution than what can take place in the night when the air is colder; in which caſe, the water falls in dews and fogs. The vapours, thus raiſed by heat, aſcend into the cold region of the atmoſphere, and, not being there kept in a ſtate of perfect ſolution, form clouds.

304. Marriotte ſuppoſed *Springs* to be owing to rain water and melted ſnow, which penetrating the ſurfaces of hills, and running by the ſide of clay or rocks which it cannot penetrate, at laſt comes to ſome place where it breaks out. This would account for the phænomenon, provided the ſupply from theſe cauſes was ſufficient. Now Dr. Halley has diſcovered a cauſe ſufficient for a ſupply; for he has proved by experiment, that the vapours which are raiſed, afford a much greater ſupply than is neceſſary. We will give the account in his own words.

305. "We took a pan of water (ſalted to the degree of the ſaltneſs of the ſea, by a ſolution of about a fortieth part of ſalt) about 4 inches deep, and $7\frac{3}{10}$ inches diameter, in which we placed a thermometer, and by means of a pan of coals, we brought the water to the ſame degree of heat which is obſerved to be that of the air in our hotteſt ſummers; the thermometer nicely ſhowing it. This done, we affixed the pan of water, with the thermometer in it, to one end of the beam of the ſcales, and exactly counterpoiſed it with weights at the other end; and by the application or removal of the pan of coals, we found it very eaſy to maintain the water in the ſame degree of heat preciſely. Doing this, we found the weight of the water ſenſibly to decreaſe; and at the end of two hours we obſerved, that there wanted

wanted half an ounce troy, all but 7 grains, or 233 grains of water, which in that time had gone off in vapour; though one could hardly perceive it ſmoke, and the water was not ſenſibly warm. This quantity in ſo ſhort a time ſeemed very conſiderable, being little leſs than 6 ounces in 24 hours, from ſo ſmall a circle as 8 inches diameter. To reduce this experiment to an exact *calculus*, and to determine the thickneſs of the ſkin of water which had evaporated, I aſſume the experiment alleged by Dr. Edw. Bernard to have been made in the *Oxford Society*, viz. that the cubic foot *Engliſh* of water weighs exactly 76 pounds troy; this divided by 1728, the number of inches in a foot, will give $253\frac{1}{2}$ grains, or half an ounce $13\frac{1}{2}$ grains for the weight of a cubic inch of water; wherefore the weight of 233 grains is $\frac{233}{253\frac{1}{2}}$, or 35 parts of 38 of a cubic inch of water. Now the area of the circle, whoſe diameter is $7\frac{9}{16}$ inches, is 49 ſquare inches, by which dividing the quantity of water evaporated, viz. $\frac{35}{38}$ of an inch, the quotient $\frac{35}{1862}$, or $\frac{1}{53}$, ſhows that the thickneſs of the water evaporated was the 53d part of an inch: but we will ſuppoſe it to be only the 60th part, for the facility of calculation. If therefore water, as warm as the air in ſummer, exhales the thickneſs of the 60th part of an inch in two hours from its whole ſurface, in 12 hours it will exhale $\frac{1}{10}$ of an inch; which quantity will be found abundantly ſufficient to ſerve for all the rains, ſprings, and dews, and account for the *Caſpian Sea*'s being always at a ſtand, neither waſting nor overflowing; as likewiſe for the current ſaid to ſet always in at the ſtraights of *Gibraltar*, though thoſe *Mediterranean Seas* receive ſo many, and ſo conſiderable rivers.

306. To eſtimate the quantity of water ariſing in vapours out of the ſea, I think I ought to conſider it only the time the ſun is up, for that the dews return in the night as much, if not more vapours than are then emitted; and in ſummer the days being longer than 12 hours, this exceſs is balanced by the weaker rays of the ſun, eſpecially when riſing before the water is warmed: ſo that if I allow $\frac{1}{10}$ of an inch of the ſurface of the ſea to be raiſed *per diem* in vapours, it may not be an improbable conjecture.

307. Upon this ſuppoſition, every 10 ſquare inches of the ſurface of the water, yields in vapour, *per diem*, a cubic inch of water; and every ſquare foot, half a wine pint; every ſpace of 4 ſquare feet, a gallon; a mile ſquare, 6914 tons; a ſquare degree, ſuppoſe of 69 *Engliſh* miles, will evaporate 33 million of tons: and if the *Mediterranean* be eſtimated at 40 degrees long, and 4 broad, allowances being made for the places where it is broader by thoſe that are narrower, (and I am ſure I gueſs at the leaſt,) there will be 160 ſquare degrees of ſea; and conſequently the whole *Mediterranean Sea* muſt loſe in vapour, in a ſummer's day, at leaſt 5280 millions of tons. And this quantity of vapour, though very great, is as little as can be concluded from the experiment produced: and yet there remains another cauſe, which cannot be reduced to the rule, I mean the winds, whereby the ſurface of the water is licked up, ſomewhat faſter than it exhales by the heat of the ſun, as it is well known to thoſe that have conſidered thoſe drying winds which blow ſometimes.

308. The *Mediterranean* receives theſe conſiderable rivers: the *Iberus*, the *Rhone*, the *Tiber*, the *Po*, the *Danube*, the *Nieſter*, the *Boryſthenes*, the *Tanais*, and the *Nile*, all the reſt being of no great note, and their quantity of water inconſiderable. We will ſuppoſe each of theſe nine rivers to bring down ten times as much water as the river *Thames*, not that any of them is ſo great in reality, but to comprehend with them all the ſmall rivulets that fall into the ſea, which otherwiſe I know not how to allow for.

309. To calculate the water of the *Thames*, I aſſume that at *Kingſton Bridge*, where the flood never reaches, and the water always runs down, the breadth of the channel is 100 yards, and its depth 3, it being reduced to an equality (in both which ſuppoſitions I am ſure I take the moſt). Hence, the profile of the water in this place is 300 ſquare yards: this multiplied by 48 miles, (which I allow the water to run in 24 hours, at 2 miles in an hour) or 84480 yards, gives 25344000 cubic yards of water to be evacuated every day, that is, 2030000 tons *per diem*; and I doubt not but in the exceſs of my meaſure of the channel of the river, I have made more than ſufficient allowance for the waters of the *Brent*, the *Wandel*, the *Lea*, and the *Derwent*, which are all worth notice, that fall into the *Thames* below *Kingſton*.

310. Now if each of the aforeſaid nine rivers yield ten times as much water as the *Thames* doth, it will follow, that each of them yields but 203 millions of tons *per diem*, and the whole nine but 1827 millions of tons in a day; which is but little more than $\frac{1}{3}$ of what is raiſed by vapours out of the *Mediterranean* in twelve hours."

311. Thus the Doctor has ſhown that the waters raiſed by vapours are vaſtly more than ſufficient for the ſupply of all the rivers; the overplus may fall, partly upon the ſea, and partly upon the flat lands, and not contribute to fill the rivers. We may therefore admit Mr. Marriotte's ſolution of the cauſe of ſprings.

312. Beſides the *conſtant* ſprings, there are others which *ebb* and *flow* alternately, which may be thus accounted for. The water, before it breaks out, may meet with a large cavity on the ſide of the hill, and upon the overflowing of this refervoir, it may find an aperture, and make its eſcape; in caſe of dry weather, therefore, the ſupply of water may not be ſufficient to keep it full, in which caſe, the ſpring will ceaſe to flow, and continue dry, till a ſupply cauſes it to overflow, and produce again the ſpring.

313. There is another theory to account for ſprings and rivers, which refers this cauſe to a great abyſs of waters occupying the central parts of our globe. It aſſerts, that all the phænomena of ſprings are chiefly derived from the vapours, veins, and iſſues, of this great abyſs, into which they are returned; and that a perpetual circulation and equality is kept up; the ſprings

never failing, and the ſea, by reaſon of its communication with the ſubterraneous waters, never overflowing. In ſinking mines and wells from 8 to 800 feet deep, it is common to break in upon powerful ſources of water, and theſe ſometimes at very great depths. Springs near the ſurface may have their ſources from reſervoirs which lie deeper, and they in their turns are fed by larger and deeper, till we come to the grand repoſitory of all, which is ſuppoſed to keep up a communication with the ſea, in conſequence of which, the water in the earth has always a tendency to riſe to the level of the ſea. Dr. DERHAM has ſhown, that ſprings occur in great plenty, and are conſtant in their courſe, even in times of the greateſt drought, where the country is in general very low, and there are no mountain tops to condenſe the vapours. M. GUALTERI ſays, that the waters diſcharged by the rivers in Italy into the ſea, are to the rain which falls upon the land, as 55 to 27. The earth is alſo moiſtened to a greater depth than can be accounted for from the falling of the rain. From all theſe circumſtances it is concluded, that there muſt be ſubterraneous reſervoirs of water. It is not unlikely but that this, and the cauſe of ſprings and rivers aſſigned by Dr. HALLEY, may both operate.

314. Clouds are formed by the water raiſed by evaporation, and are of the ſame nature as dews and fogs upon the earth. When the water in the air ceaſes to be ſuſpended, it falls down, and the particles uniting in falling, form drops. Various, probably, are the cauſes of the precipitation of the water. After the air is ſaturated with vapour, a ſudden diminution of the denſity of the air will cauſe it to part with ſome of its vapours; for as a certain quantity of air can hold but a certain quantity of water in ſolution, if that air become rarefied, it will not hold all its water in ſolution, and a precipitation will take place. As vapour is principally raiſed by heat, a variation of temperature will probably cauſe a precipitation. Alſo, we know by an electrometer, that the air is always in a ſtate of electricity, ſometimes poſitive, and ſometimes negative. From M. DE SAUSSURE's obſervations, in winter the electricity was generally weakeſt in an evening, when the dew had fallen, until the ſun's riſing; it afterwards increaſed, and generally before noon it attained its maximum, and then diminiſhed, till the fall of the dew, when it would be ſometimes ſtronger than it had been during the whole day; after which, it would gradually diminiſh the whole night. In ſummer, in general, if the ground have been dry for ſome days, and the air been dry alſo, the electricity generally increaſes from the riſing of the ſun till 3 or 4 in the afternoon, when it is ſtrongeſt; it then diminiſhes till the dew begins to fall, and then it increaſes; but after this it declines, and is very ſmall during the night. Now BECCARIA reckons rain, hail, and ſnow, amongſt the effects of the electricity of the atmoſphere. Clouds which bring rain, he thinks, are produced in the ſame manner as thunder-clouds are, only by a leſs degree of electricity. He remarks ſeveral circumſtances attending rain without lightning, which make it probable that it is produced by the ſame cauſe as when it is attended by thunder and lightning. Light has been ſeen amongſt the clouds by night in rainy weather; and even by day, rainy clouds are ſeen to have a brightneſs evidently independent of the ſun. The intenſity of electricity alſo in his apparatus, uſually correſponded very well with the quantity of rain. The phænomena alſo of thunder, lightning, and rain, are very frequently obſerved to accompany each other, which ſhows the connection they have with a common cauſe. He ſuppoſes that previous to rain, a quantity of electric matter eſcapes out of the earth, and in its aſcent, collects a quantity of vapour, and thus the air becomes overcharged with vapours. Hence, the rain will be heavier the more vigorous the electricity is; and this is agreeable to obſervation. Mr. DE LUC has ſhown that water in a ſtate of vapour combined with the air, produces no moiſtneſs, and therefore concludes that rain does not ariſe from the moiſture in the atmoſphere *prior* to the rain. The decompoſition produces the moiſture and then the rain. If it be very cold in theſe regions where the rain begins to be formed, it then deſcends in ſnow; and when the drops of rain are formed, and are deſcending, if in their deſcent they paſs through a region of the air cold enough to freeze them, they deſcend in hail.

On the Temperature of different Parts of the Earth.

315. The preſence of the ſun is one of the principal ſources of heat, and its abſence the cauſe of cold; and were theſe the only ſources of heat and cold, in the ſame parallel of latitude there would be the ſame degree of heat or cold at the ſame ſeaſon; but this is found to be contrary to matter of fact; the temperature of the eaſtern coaſt of *North America* is much colder than the weſtern coaſt of *Europe*, under the ſame latitude. Very hot days are frequently felt in the coldeſt climates; and very cold weather, even perpetual ſnow is found in countries under the equator. We muſt therefore ſeek for other cauſes of heat and cold, and theſe muſt evidently be partly local.

316. One great ſource of heat is from the earth; whether this ariſes from any central fire, or from a maſs of heat diffuſed through the earth, it is not perhaps eaſy to ſay; the latter cauſe is perhaps the moſt probable; and in this caſe, the heat which is thus gradually loſt is renewed again by the ſun. This heat imparted from the earth to the atmoſphere, tends greatly to moderate the ſeverity of the winter's cold. It is found by obſervation, that the ſame degree of heat reſides in all ſubterraneous places at the ſame depth, varying a little at different depths, but is never leſs than 36° of FAHRENHEIT's thermometer. There is however an exception to this in mines, where there is probably ſome chemical operations going forwards. Mr. KIRWAN, in his *Eſtimate of the Temperature of different Latitudes*, and to whom we are principally indebted for what we ſhall here give upon

upon this ſubject, obſerves, that at 80 or 90 feet (if this depth have any communication with the open air, and perhaps, at a much leſs depth, if there be no ſuch communication) the temperature of the earth varies very little, and generally approaches to the *mean* annual heat. Thus the temperature of ſprings is nearly the ſame as the mean annual temperature, and varies very little in different ſeaſons. The temperature of the cave at the obſervatory at *Paris* is about 53½ degrees, and varies about half a degree in very cold years; its depth is about 90 feet. The internal heat of the earth in our climate is always above 40°, and therefore the ſnow generally begins to melt firſt at the bottom. The next ſource of heat is the condenſation of vapour. It is well known that vapour contains a great quantity of heat, which produces no other effect, but that of making it aſſume an aërial, expanded ſtate, until the vapour is condenſed into a liquid; during which condenſation a certain quantity of heat eſcapes, and warms the ſurrounding atmoſphere. This condenſation is frequently formed by the attraction of an electrical cloud, and hence ariſes the great ſultrineſs which we frequently experience before rain, and particularly before a thunder ſtorm.

317. As the earth is one of the great ſources of heat, warming the ſurrounding air, diſtance from the earth muſt be a ſource of cold; and thus we find that as you aſcend in the atmoſphere, the cold increaſes. In the vicinity of Paris, the temperature of the earth being 47°, at the eſtimated height of 11084 feet it was found to be 21°, or 11° below congelation, by M. Charles who aſcended in a balloon. And Lord Mulgrave, at the bottom of *Hacklyt-Hill*, lat. 80°, found the temperature of the air 50°; but on the top, at the height of 1503 feet, only 42°. Hence we find, that the higheſt mountains, even under the equator, have their tops continually covered with ſnow. Mr. Bouguer found the cold of *Pinchina*, one of the *Cordelieres*, immediately under the line, to extend from 7° to 9° below the freezing point every morning before ſun-riſe; and hence at a certain height, which varies in almoſt every latitude, it conſtantly freezes at night all the year round, though in the warm climates it thaws to ſome degree the next day. This height he calls the *lower Term of congelation*: between the tropics he places it at the height of 15577 feet, *Engliſh* meaſure. The next great ſource of cold is *evaporation*. The ſame cauſe which makes the condenſation of vapour a ſource of heat, makes evaporation the ſource of cold; as it abſorbs the fire in the latter inſtance, which it gives out in the former: the heat thus abſorbed is called *latent* heat, it producing, in that ſtate, no ſenſation of warmth. At a certain height above the lower term of congelation it never freezes, not becauſe the cold decreaſes, but becauſe the vapours do not aſcend ſo high; this height Mr. Bouguer calls the *upper term of congelation*, and under the equator he fixes it at the height of 28000 feet. Mr. Kirwan has given us the following *mean* height of the *upper* and *lower* terms of congelation, for the latitude of every five degrees, in *feet*.

Lat.	Alt. *lower* Term.	Alt. *upper* Term.	Lat.	Alt. *lower* Term.	Alt. *upper* Term.
0°	15577	28000	45°	7658	13730
5	15457	27784	50	6260	11253
10	15067	27084	55	4912	8830
15	14498	26061	60	3684	6546
20	13719	24661	65	2516	4676
25	13030	23423	70	1557	2809
30	11592	20838	75	748	1346
35	10664	19169	80	120	207
40	9016	16207			

318. Sometimes the temperature of the upper air is higher than that of the lower air, particularly when a large maſs of vapours is condenſed by electrical agency; for no part of the heat given out by that cauſe being loſt by communication with air much colder, that which ſurrounds the vapours ſo condenſed, muſt be heated to a conſiderable degree. The clouds, by abſorbing the ſun's rays, are more heated than the clear air would be. Theſe, and other circumſtances, render the true height of the terms of congelation at any time, ſubject to conſiderable uncertainty.

319. The clearing away of woods leſſens the vapours, and conſequently diminiſhes the quantity of rain, and increaſes the temperature. Several pariſhes in *Jamaica* which uſed to produce fine crops of ſugar canes, are now dry for 9 months in a year, and are turned into cattle-pens, through the clearing away of the woods. Hence, water is moſt plentiful in thoſe countries where woods abound, and the beſt ſprings are there found. In *America*, ſince the woods in the neighbourhood of their towns have been cut down, many ſtreams have become dry; and others have been reduced ſo low, as to cauſe great interruptions to the miller.

320. Of evaporation, the following facts may be obſerved. 1. That in our climates, evaporation is about four times as great from the 21ſt of March to the 21ſt of September, as from the 21ſt of September to the 21ſt of March.

2. That, other circumſtances being the ſame, it is greater in proportion as the difference between the temperature of the air, and that of the evaporating ſurface is greater; and ſo much the ſmaller, as the difference is ſmaller; and therefore ſmalleſt, when the temperature of the air and evaporating liquor are equal. The former part of this propoſition however requires ſome reſtriction; for if air be more than 15 degrees colder than the evaporating ſurface, there is ſcarce any evaporation; but on the contrary, it depoſits its moiſture on the ſurface of the liquor.

3. The degree of cold produced by evaporation, is always much greater when the air is warmer than the evaporating ſurface, than that which is produced when the ſurface is warmer than the air. Hence, warm winds, as the *Sirocco* and *Harmatan*, are more drying than cold winds.

4. Evaporation is more copious when the air is leſs loaded with vapours, and is therefore greatly promoted by cold winds flowing into warmer countries.

5. Evaporation is greatly increaſed by a current of air or wind flowing over the evaporating ſurface, becauſe unſaturated air is conſtantly brought into contact with it. Hence, calm days are hotteſt, as has commonly been remarked.

6. Tracts of land covered with trees or vegetables emit more vapour than the ſame ſpace covered with water. Mr. WILLIAMS (*Philadelphia Tranſactions*) found this quantity to amount to $\frac{1}{3}$ more. Hence, the air about a wood or foreſt is made colder by evaporation from trees and ſhrubs, while the plants themſelves are kept in a more moderate heat, and ſecured from the burning heat of the ſun by the vapours perſpired from the leaves. Thus, we find the ſhade of vegetables more effectual to cool us, as well as more agreeable, than the ſhade from rocks and buildings.

321. The heat and cold of different countries are tranſmitted from one to the other, by the medium of winds.

322. From what has been obſerved it is manifeſt, that ſome ſituations are better fitted to receive or communicate heat, than others; thus, high and mountainous ſituations being nearer to the ſource of cold than lower ſituations; and countries covered with woods, as they prevent the acceſs of the ſun's rays to the earth, or to the ſnow which they may conceal, and preſent more numerous evaporating ſurfaces, muſt be colder than open countries, though ſituated in the ſame latitude. And ſince all tracts of land preſent infinite varieties of ſituation, uniform reſults cannot here be expected. Mr. KIRWAN obſerves therefore, that it is on water only that we muſt ſeek for a ſtandard ſituation with which to compare the temperature of other ſituations. Now the globe contains, properly ſpeaking, but two great tracts of water, the Atlantic Ocean, and the Pacific Ocean; which may each be divided into north and ſouth, as they lie on the northern or ſouthern ſide of the equator. In this tract of water, he choſe that ſituation for a ſtandard which recommends itſelf moſt by its ſimplicity, and freedom from any but the moſt permanent cauſes of alteration of temperature; viz. that part of the Atlantic which lies between 80° north and 45° ſouth latitude, and extending ſouthwards as far as the Gulph Stream, and to within a few leagues of the Coaſt of *America*; and that part of the Pacific Ocean which lies between 45° north and 40° ſouth latitude, and from 20° to 275° eaſt longitude. Within this ſpace, the *mean* annual temperature will be found as expreſſed by the following table. The temperatures beyond 80° latitude are added, though not ſtrictly within the ſtandard.

A Table

A Table of the *mean* Annual Temperature of the ſtandard ſituation, in every degree of Latitude.

Lat.	Temp.	Lat.	Temp.	Lat.	Temp.
0°	84	33°	68,3	62°	42,7
5	83,6	34	67,4	63	41,9
6	83,4	35	66,6	64	41,2
7	83,2	36	65,7	65	40,4
8	82,9	37	64,8	66	39,7
9	82,7	38	63,9	67	39,1
10	82,3	39	63	68	38,4
11	82	40	62	69	37,8
12	81,7	41	61,2	70	37,2
13	81,3	42	60,3	71	36,6
14	80,8	43	59,4	72	36
15	80,4	44	58,4	73	35,5
16	79,9	45	57,5	74	35
17	79,4	46	56,4	75	34,5
18	78,9	47	55,6	76	34,1
19	78,3	48	54,7	77	33,7
20	77,8	49	53,8	78	33,2
21	77,2	50	52,9	79	32,9
22	76,5	51	52,4	80	32,6
23	75,9	52	51,1	81	32,2
24	75,4	53	50,2	82	32
25	74,5	54	49,2	83	31,7
26	73,8	55	48,4	84	31,5
27	72,8	56	47,5	85	31,4
28	72,3	57	46,7	86	31,2
29	71,5	58	45,8	87	31,14
30	70,7	59	45,1	88	31,10
31	69,9	60	44,3	89	31,04
32	69,1	61	43,5	90	31

323. The rule by which this table has been computed, was given by the famous aſtronomer TOBIAS MAYER of *Göttingen*, and is as follows; it was conſtructed from knowing the mean annual temperatures of two latitudes. Let s be the ſine of the latitude; then the mean annual temperature will be $84-53\times s^2$; that is, *from* 84 *ſubtract* 53 *multiplied into the ſquare of the ſine of the latitude, and the remainder is the mean annual temperature.*

324. The temperatures of different years differ very little near the equator, but they differ more and more as you approach the poles.

325. It ſcarce ever freezes in latitudes under 35°, except in high ſituations; and it ſcarce ever hails in latitudes higher than 60°.

326. In latitudes between 35° and 60°, in places adjacent to the ſea, it generally thaws when the ſun's altitude is 40° or upwards; and ſeldom begins to freeze, until the ſun's meridian altitude is below 40°.

327. The greateſt cold in all latitudes in our hemiſphere, is generally about half an hour before ſun-riſe. The greateſt heat in all latitudes between 60° and 45° is about half-paſt 2 o'clock in the afternoon; between latitudes 45° and 35°, about 2 o'clock; between latitudes 35° and 25°, about half-paſt 1 o'clock; and between latitude 25° and the equator, about 1 o'clock. On ſea, the difference between the heat of day and night, is not ſo great as on land, particularly in low latitudes.

328. In all latitudes, January is the coldeſt month. July is the warmeſt month in all latitudes above 48°; but in lower latitudes, Auguſt is the warmeſt. The temperature of April approaches more nearly to the mean annual temperature, than any other month.

329. In the higheſt latitudes, we often meet with an heat of 75° or 80°; and in latitudes 59° and 60° the heat of July is frequently greater than in latitude 51°.

330. All countries lying to the windward of high mountains, or extenſive foreſts, are warmer than thoſe to the leeward in the ſame latitude.

331. The vicinity to the ſea is another circumſtance which

which affects the temperature of a climate; as it moderates the heat from the land, and brings the atmosphere down to a ſtandard beſt fitted to the human conſtitution. In our hemiſphere, countries which lie to the ſouth of any ſea, are warmer than thoſe that have the ſea lie to the ſouth of them, becauſe the winds that ſhould cool them in winter are mitigated by paſſing over the ſea; whereas thoſe which are northward of the ſea, are cooler in ſummer by the breezes from it. A northern or ſouthern bearing of the ſea, renders a country warmer than an eaſtern or weſtern bearing.

332. Iſlands participate more of temperature ariſing from the ſea, and are therefore warmer than continents.

333. The ſoils of large tracts of land have their ſhare in influencing the temperature of the country: Thus, ſtones and ſand, heat and cool more readily, and to a greater degree, than mould; hence, the violent heats in the ſandy deſarts of *Arabia* and *Africa*; and the intenſe cold of *Terra del Fuego*, and other ſtony countries in cold latitudes.

334. Vegetables conſiderably affect the temperature of a climate. Wooded countries are much colder than thoſe which are open and cultivated.

335. Every habitable latitude enjoys a heat of 60° at leaſt, for two months, and this is neceſſary for the growth and maturity of corn. The quickneſs of vegetation in the higher latitudes proceeds from the time the ſun is above the horizon. Rain is but little wanted, as the earth is ſufficiently moiſtened by the liquifaction of the ſnow that covers it during the winter. In this we cannot ſufficiently admire the wiſe diſpoſition of Providence.

336. It is owing to the ſame provident hand that the globe of the earth is interſected with ſeas and mountains, in a manner, that ſeems, on its firſt appearance, altogether irregular and fortuitous; preſenting to the eye of ignorance, the view of an immenſe ruin: but when the effects of theſe ſeeming irregularities on the earth are carefully inſpected, they are found moſt beneficial, and even neceſſary to the welfare of its inhabitants; for to ſay nothing of the advantages of trade and commerce, which could not exiſt without ſeas, we have ſeen that it is by their vicinity, that the cold of higher latitudes is moderated, and the heat of the lower. It is by the want of ſeas, that the interior parts of *Aſia*, as *Siberia* and *Great Tartary*, as well as thoſe of *Africa*, are rendered almoſt uninhabitable; a circumſtance which furniſhes a ſtrong prejudice againſt the opinion of thoſe, who think thoſe countries were the original habitations of man. In the ſame manner, mountains are neceſſary; not only as the reſervoirs of rivers, but as a defence againſt the violence of heat in the warm latitudes; without the Alps, Pyrenees, Apennine, the mountains of Dauphine, Auvergne, &c. *Italy*, *Spain* and *France* would be deprived of the mild temperature which they now enjoy. Without the Balgate Hills, or Indian Apennine, *India* would have been a deſert. Hence, *Jamaica*, *St. Domingo*, *Sumatra*, and moſt other iſlands between the tropics, are furniſhed with mountains, from which the breezes proceed which refreſh them.

337. The annual heat of *London* and *Paris* is nearly the ſame; but from the beginning of April to the end of October, the heat is greater at Paris than at London. Hence, grapes arrive at greater perfection in the neighbourhood of Paris than about London.

338. The following table contains a compariſon of the temperature of *London* with ſeveral other places. The firſt column contains the place; the ſecond, the annual temperature; the third, the temperature of January, that being the coldeſt month; and the fourth, the temperature of July; that at London, as the ſtandard, being eſtimated at 1000. The degree of *cold* is eſtimated in the third column, and the degree of *heat* in the fourth and ſecond.

Places.	An. Temp.	Temp. Jan.	Temp. July.
London	1000	1000	1000
Paris	1028	1040	1037
Edinburgh	923	1040	914
Berlin	942		
Stockholm	811	1583	964
Peterſburgh	746	3590	1003
Vienna	987	1305	1037
Pekin	1067	1730	1283
Bourdeaux	1090	925	1139
Montpelier	1170	850	1196
Madeira	1319	559	1128
Spaniſh Town, in Jamaica	1557		
Madraſs	1565	491	1349

339. At

339. At *London*, by a mean of the obſervations made at the Royal Society from 1772 to 1780, it appears that the mean annual temperature is 51°,9, or in whole numbers, 52°; and the monthly temperature is as follows:

January	35°,9
February	42,3
March	46,4
April	49,9
May	56,61
June	63,22
July	6[illegible],8
Auguſt	65 85
September	59,63
October	52,81
November	44,44
December	41,04

The greateſt uſual cold is 20°, and happens in January; the greateſt uſual heat is 81° and happens generally in July.

The limits of the annual variation are 2°,5, that is, 1° above, and 1°,5 below the mean.

The greateſt variations of the mean temperature of the ſame month in different years, are as follows:

January	6°	July	2°
February	5	Auguſt	2
March	4	September	3,5
April	3	October	4
May	2,5	November	4
June	2	December	3

Hence it appears, that the temperatures of the ſummers differ much leſs than thoſe of the winters.

The moſt uſual variations of temperature within the ſpace of 24 hours in every month, are,

January	6°	July	10°
February	8	Auguſt	15
March	20	September	18
April	18	October	14
May	14	November	9
June	12	December	6

340. At *Peterſburgh*, latitude 59°. 56′, longitude 30°. 24′ E. the mean annual temperature is 38°,8, from the mean of 6 years. The greateſt cold obſerved was that at which mercury freezes, that is, 39° below 0°; but the greateſt mean degree of cold for ſeveral years was 25° below 0°. The greateſt ſummer heat, on a mean, is 79°, yet once it amounted to 94°. It ſcarce ever hails at this place.

341. In latitude 79°. 50′, Lord MULGRAVE obſerved the greateſt heat for two days to be 58°, and the leaſt 46°. Mr. MARTIN obſerves, that the weather in the polar regions is very unſteady: one hour it blows a violent ſtorm, and in the next there is a dead calm; neither does it blow long in any one point, but ſometimes from every point within 24 hours. After a calm, the north wind ſprings up firſt; the ſky is ſeldom perfectly clear, and ſtorms are much more frequent than in lower latitudes.

342. In *Europe*, unuſual cold in ſummer may ariſe, either from a long continuance of eaſterly or northerly winds, or from frequent and heavy rains, which are followed by great evaporations, or from a long continuance of cloudy weather in June and July, which prevents the earth from receiving its proper degree of heat.

343. The cauſes of unuſual cold in winter may be theſe. 1ſt, *Unuſual cold in the preceding ſummer.* For the heat in the winter being in a great meaſure derived from the earth, if this be deprived of its uſual heat, the want of it muſt be perceived in winter. The cold of January 1709, was the ſevereſt, long known in Europe; and Mr. DERHAM remarked, that the preceding June was ſo cold, that his thermometer was near the freezing point on the 12th of that month, and the quantity of rain was much greater than uſual. Mr. WOLF made the ſame obſervation in *Germany*. 2dly *Heavy rains followed by eaſterly or northerly winds.* This circumſtance produces great cold at any time, on account of the great evaporation which then takes place by theſe dry winds. It took place in October 1708, as Mr. WOLF obſerved; and an intenſe cold immediately followed. 3dly. *Weſterly or ſoutherly currents, in the upper regions of the atmoſphere, whilſt eaſterly or northerly winds prevail in the lower.* For the warm currents are deprived of their moiſture, by the cold of the ſuperior regions; and this deſcending in the form of ſnow, cools the inferior ſtrata below their uſual temperature: this circumſtance alſo took place in 1709, when the cold was greateſt. 4thly. *The arrival of Siberian, or American winds. Siberia* is 2800 miles eaſt of *London*; but according to Mr. SMEATON's computation, a common high wind moves at the rate of 35 miles in an hour, and therefore may paſs to us in 3 days from *Siberia*, and preſerve much of its original degree of cold. The winds from *America* may alſo arrive in a few days; but their rigour will be abated by paſſing over the ſea; but if the ſea have been previouſly cooled by northerly winds, the weſterly winds may prove very cold. Mr. DERHAM, on comparing his journals with thoſe of Mr. ROBIE in *New England*, found, that after a few days, the *American* winds paſſed into *England*. The wind in 1784 was equally ſevere in *America*, as in *Europe*. 5thly. *The fall of a ſuperior ſtratum of the atmoſphere.* This will happen when a cold wind in the upper regions of the atmoſphere paſſes over a country, the lower ſtrata of whoſe atmoſphere are lighter; and hence a low ſtate of the barometer generally precedes ſuch extraordinary cold. It is probably for this reaſon, that *Holland* oftener experiences a greater degree of cold, than other countries under higher latitudes; for being a moiſt country, its atmoſphere abounds more in vapours, which renders it ſpecifically lighter; thus, during the great cold of January 1783, the barometer was lower than it had been known to be for 50 years before, during that month: and MUSCHENBROCK remarked, that

that in winter, when the mercury in the barometer defcends, the cold increafes.

344. Land is capable of receiving much more either heat or cold, than water. In winter when the furface of water is much cooled by contact with the colder air, the deeper and warmer water at the bottom, being fpecifically lighter, rifes and tempers the top, and as the colder water conftantly defcends during the winter, in the following fummer the furface is generally warmer than at greater depths; whereas in winter it is colder; hence it has been remarked, that the fea is always colder in fummer and warmer in winter, after a ftorm, the water at great depths being mixed with that at the furface. Of the following obfervations, the three firft were made by Lord MULGRAVE, the three next by WALES and BAYLEY, and the other by Mr. BLADH. The third column expreffes the heat of the air over the furface of the fea; the fourth expreffes the depth of the fea in *feet*; the fifth expreffes the heat of the fea at that depth, and the fixth expreffes the heat of the fea at the furface.

Latitude.	Time.	Heat of Air.	Depth.	Heat of Sea.	Ht. of Surface.
67° N.	June 20	48,5	4680	26	
78 N.	30	40,5	708	31	
69 N.	Auguft 31	59,5	4038	32	
0	Sept. 5	75,5	510	66	74
24 S.	26	72,5	480	70	70
34. 44′ S.	Oct. 11	60,5	600	57	59
57 N.	Jan. 8	46	6	40	37
	10	43,6	50	43,6	43,6
55. 40′ N.	20	47	110	51,5	40
39. 30 N.	28	53	110	59	59
2. 55 N.	Feb. 25	81	58	81	81
2. 50 N.	26	83	110	81	84,5

345. As the water in the high northern and fouthern latitudes, is, by cold, rendered heavier than that in lower warm latitudes, hence arifes a perpetual current from the poles to the equator, which fometimes carries down large maffes of ice, which cool the air to a great extent. Inland feas of great extent have been frozen in very fevere winters. In 1668, the *Baltic* was fo firmly frozen, that CHARLES XI. of *Sweden*, carried his whole army over it; and the *Adriatic* was frozen in 1709. The temperatures of land and water differ more in winter than in fummer; for in winter, inland countries, from lat. 49° to 70° are frequently cooled down to 40°, 50°, and fome to 70° below the freezing point; whereas, the fea below lat. 76° is not colder than 4° below that point in the northern hemifphere, except fome narrow feas in the north *Pacific Ocean*; but in fummer, no confiderable extent of land is heated to more than 15° or 20° above the temperature of the fea, ftony and fandy defarts excepted.

346. The temperatures of the fmaller feas, in general, if not furrounded with high mountains, are a few degrees warmer in fummer, and colder in winter, than the ftandard ocean; in high latitudes they are frequently frozen.

347. The *white* fea is frozen in the winter.

348. The *Gulph of Bothnia* is in a great meafure frozen in winter; but in fummer it is fometimes heated to 70°. Its general temperature in July is from 48° to 56°.

349. The *German* fea is about 3° colder in winter and 5° warmer in fummer, than the *Atlantic*.

350. The *Mediterranean* fea is, for the greater part of its extent, warmer both fummer and winter, than the *Atlantic*, which, for that reafon, flows into it. It is fometimes frozen in the neighbourhood of *Venice*.

351. The *Black* fea is colder than the *Mediterranean*, and flows into it.

352. The *Caſpian* fea is fituated in the vicinity of high mountains, and is in a great meafure frozen in winter. Its level is faid, by PALLAS, to be lower than the ocean.

353. Some idea may be formed what altitudes on the furface of the globe are acceffible to man, by confidering the height above the fea of the inferior line of perpetual fnow. In the middle of the torrid zone, it appears, from Mr. BOUGUER's obfervations, to be elevated 5201 yards, and 4476 about the tropics. In middle latitudes there is conftant fnow at the height of 3300 yards. In lat. 80° north, Lord MULGRAVE found the inferior line of fnow to be at the height of 1100 yards: whence we may conclude, that at the poles, there is conftant fnow upon the furface of the earth.

On the Divisions of the Surface of the Earth.

354. The surface of the earth contains *land* and *water*. The great collection of water is called the *sea*, or the *ocean*; and this is divided into three principal parts; the *Atlantic* Ocean, which divides *Europe* and *Africa* from *America*; the *Pacific* Ocean, or *great South Sea*, which divides *Asia* from *America*; and the *Indian* Sea, which lies between *Africa* and *Malacca, Sumatra, Java, New Holland*, &c. Besides these, there are others which take their names from the countries against which they are situated; as the *Irish* Sea, the *German* Sea. There is also the *Mediterranean Sea*, dividing *Europe* from *Africa*; the *Black Sea*; the *Caspian* Sea, which is not connected with the other Seas; the *Red* Sea, &c. &c.

355. A *bay*, or *gulf*, is a part of the Sea running into the land, so as to have a considerable portion of it, more or less according to circumstances, bounded by shores; as the bay of *Biscay*, the bay of *Bengal*, *Hudson*'s bay, *Callegan* bay; the gulf of *Venice* the gulf of *Mexico*, the gulf of *Japan*, &c. &c. If the extent into the land be but small, it is called a *creek*, a *haven*, or a *road*.

356. A *strait*, or *straight*, is a narrow part of the sea running between two countries, and connecting two seas; as the straits of *Dover*, the straits of *Gibraltar*, the straits of *Sunda*, the straits of *Magellan*, &c. &c.

357. A considerable body of inland fresh water, is called a *lake*; as the lake of *Geneva*, lake *Ontario*, lake of *Derwent*, &c. &c.

358. A considerable stream of inland water which runs into the sea, is called a *river*; and smaller streams which run into a river, are called *brooks*.

359. A *current* is a stream of water upon the sea. Under the equator there are some very violent ones, against which a ship cannot make any way. There is one which carries a ship very swiftly from *Africa* to *America*, but it cannot return the same way. Governor Pownal observes, that this current performs a continual circulation, setting out from the coast of *Guinea*, crossing over the *Atlantic*, setting into the gulf of *Mexico* by the south, and sweeping round by the bottom of the gulf, it issues on the north side, and goes along the coast of *North America* till it arrives at *Newfoundland*, where it is turned back across the Atlantic to the coast of Europe, and thence southward to the point from which it sets out. In *St. George's Channel* there is a current which usually sets in eastward. From the *Baltic* a current sets into the *British Channel*. It is generally allowed, that there is always a current setting round the Capes of Finisterre and Ortegal into the bay of Biscay; and Mr. Rennell has discovered that this current is continued, and passes about N. W. by W. from the coast of France, to the westward of Scilly and Ireland. In crossing the Atlantic therefore for the English Channel, he advises the navigator to keep in the parallel of 48°. 45', at the highest, lest the current should carry him upon the rocks of Scilly. From an ignorance of this current, many ships have been lost on those rocks.

360. A very great extent of land is called a *continent*, of which there are two; one contains *Europe*, *Asia* and *Africa*, and the other contains *America*; and these are called the four quarters of the world; the former is also called the *eastern*, and the latter the *western* continent.

361. A small extent of land surrounded by the sea, is called an *island*; as the island of *Great Britain*, the island of *Jamaica*, the island of *Java*, &c. &c.

362. If land run out from the main land, and be joined to it by a narrow tract of land, the land so running out is called a *Peninsula*, or almost an island; and the narrow tract is called an *Isthmus*.

363. If the land project far into the sea without an isthmus, it is called a *promontory*, the end of which is called a *cape*.

On the Component Parts of the Earth.

364. The two grand divisions of the earth are what are usually called *land* and *water*. The subdivisions may be as follows: *earths* and *stones*; *salts*; *inflammable* substances; *metalic* substances.

365. Earths and Stones. Mineralogists divide these into *calcareous*, *ponderous*, *magnesian* or *muriatic*, *argillaceous*, and *siliceous*. All stones and earths consist of these substances, either singly, or mixed, or chymically combined, together with saline, inflammable and metalic substances, for they are seldom found pure. They are nearly insoluble in water, and have their specific gravities between 1 and 5, that of water being 1.

366. *Calcareous* earth, when freed from the carbonic acid by means of heat, and rendered pure from all other substances, constitutes *lime*. Its specific gravity is about 2,3. It combines with all acids, and is easily soluble in the nitrous or marine, and forms deliquescent salts. There are a great many specimens of this earth; as limestone, chalk, selenite, island crystals, almost all kinds of spars, whether transparent or opaque, and many kinds of marble; all these consist of this earth combined with some acid. To these we may add, Ketton stone, Portland stone, Purbeck stone. Vegetable and animal earths are found to be calcareous; the latter, purely so; and the former for the most part, with a mixture sometimes of the calces of iron and manganese; but the greater part of the substances of vegetables is water. According to some late experiments, 33 pounds of oak afforded only 3 drachms of ashes. Hence we see why clay is unfavourable to vegetation, and how calcareous earth is introduced into the bodies of animals.

367. *Ponderous* earth, or *barytes*, has its specific gravity about 4. Its specimens are the ponderous spar, or marmor metallicum, commonly known by the name of Cawk. It combines with acids, and with the nitrous and marine it forms salts that do not deliquesce. This earth combined with the aerial fluid, has been found at Alston Moor, in Cumberland, and resembles alum.

368. *Magnesian* earth has its specific gravity about 2,33. It combines with acids; and the specimens are steatites, soap-rock, French chalk, asbestos, and talk. Epsom salt is also a combination of this earth with vitriolic acid.

369. *Argillaceous* earth, or clay, has its ſpecific gravity not above 2. It combines with acids, and with the vitriolic it forms alum. It imbibes water very ſtrongly, and, capable of being moulded into various forms, it is of great uſe in the arts and manufactories, for the eſſential ingredient in all kinds of pottery, is clay; the Engliſh ſtone ware is compoſed of pipe clay and ground flints; the yellow Queen's ware is made of the ſame materials, but in different proportions. China is a ſemivitrified earthern ware of an intermediate nature between common wares and glaſs. Chineſe ware is compoſed of two ingredients, one a hard ſtone called *petuntſe*, and the other called *kaolin*. This earth contracts very much by heat, and thence it has been made uſe of as a meaſure of very great heats, by conſidering the different degrees of contraction. The natural ſpecimens are, boles, clays, marles, ſlates, mica, gems, &c.

370. *Siliceous* earth has its ſpecific gravity 2,65. It is called cryſtalline, or vitrifiable earth, and combines with no acid, except the ſparry. Extreme hardneſs is one of its properties, ſo that ſtones, in which it predominates, as flint, will ſtrike fire with ſteel. It may be diſſolved by fixed alkalis, either in the dry or wet way. Its ſpecimens are, cryſtal, which is one of the pureſt, quartz, flints, onyx, jaſper, wetſtone, ſand and gravel, &c. The precious ſtones are principally compoſed of argillaceous and ſiliceous earths. BERGMAN obtained from 100 parts of the following precious ſtones:

	Clay	Flint	Lime	Iron
Emerald -	60	24	8	6
Sapphire -	58	35	5	2
Topaz -	46	39	8	6
Hyacinth -	40	25	20	13
Ruby - -	40	39	9	10

371. Mr. KIRWAN obſerves, that the diamond and plumbago, cannot properly be arranged under the claſſes of minerals, earths, nor inflammables; but diamond has been ſince aſſigned to the latter claſs. A diamond is tranſparent, often colourleſs, ſtrikes fire with ſteel, cuts the hardeſt cryſtals, and even rubies, being the hardeſt of all bodies: Its ſpecific gravity is about 3,6. No acid but the vitriolic can affect it. In a heat ſomewhat greater than that in which ſilver melts, a diamond is entirely volatilized and conſumed. Plumbago has its ſpecific gravity from 1,987 to 2,267. It is inſoluble in mineral acids. The ſubſtance is black without, but blueiſh white when firſt cut. It is uſed for pencils.

372. SALTS are thoſe ſubſtances which are fuſible, volatile, ſoluble in water, not inflammable, and ſapid when applied to the tongue. In their moſt ſimple ſtate it is a white, brittle, and in ſome meaſure a tranſparent maſs. They are ſimple and compound. Simple ſalts are acids and alkalis; and from their union a compound ſalt is formed, called neutral. Earths and metals will alſo unite with them and form compound ſalts.

373. *Acids* are generally fluid, and one mark by which they may be diſcovered, is their property of changing to a red, the infuſion of violets. They are diſtinguiſhed into mineral, vegetable, and animal.

374. *Mineral* acids are the ærial, the vitriolic, the marine, the nitrous, the ſparry, the ſuccinous, the phoſphoric, the molybdenous, the arſenical, the tungſtenic, and the ſedative.

375. *Vegetable* acids are vinegar, the acids of tartar, of ſugar, of ſorrel, of lemons, and of benjamin.

376. *Animal* acids are, acids of milk, of ſugar of milk, of ants, of tallow, of Pruſſian blue, and the acidum perlati.

377. *Alkalis* are of two ſorts, fixed and volatile; and the fixed are either vegetable or mineral. The mineral fixed alkali is met with in an impure ſtate in kelp, barilla, ſoda. The vegetable fixed alkali is met with in an impure ſtate in ſalt of tartar, pot-aſh, pearl-aſh, &c. The volatile alkali is never met with but as compounded with other bodies. It is ſold in ſhops under the name of ſmelling ſalts. Alkalis change the blue infuſion of violets to green.

378. INFLAMMABLES. Under this head are included thoſe ſubſtances which are inflammable, and which do not come under the denomination of earths, ſalts, or metalic ores, and have general characters perfectly diſtinct from them. Of theſe, ſome are fluid, and ſome ſolid; the ſpecific gravity of the latter never exceeds 2,5, and the former are the lighteſt of all bodies.

379. Theſe ſubſtances are, inflammable air, or fire damp, ſuch as is frequently found in coal-pits and mines, and this will burn when mixed with twice or thrice its bulk of common air; alſo, hepatic air, petrol, Barbadoes tar, mineral tallow, Scotch coal, Newcaſtle coal, Cannel coal, Kilkenny coal, amber, copal, ſulphur, brimſtone, &c.

380. Cannel coal burns with a bright light, and is ſo hard, that it is uſed to make ſnuff-boxes, buttons, &c. Newcaſtle coal will cake and become cinders. Scotch coal burns to a white aſh. Kilkenny coal burns with leſs flame and ſmoak than Cannel coal, and more ſlowly, though intenſely. The earth in this coal does not exceed $\frac{1}{20}$ of its weight; and its ſpecific gravity is about 1,4. Wherever coals exiſt, ſlates are found near them; and ſalt or mineral ſprings in the neighbourhood.

381. METALS. Theſe ſubſtances are opaque bodies, whoſe ſpecific gravities are above 5. They are all conductors of electricity, and the beſt of any ſubſtances. They are ſoluble in nitrous acid, or in aqua regia; and all precipitable in ſome degree by cauſtic alkali. There are 17 metalic ſubſtances; gold, platina, ſilver, copper, iron, lead, tin, mercury, zinc, regulus of antimony, regulus of arſenic, biſmuth, cobalt, nickel, regulus of manganeſe, and regulus of molybdena. By the action of fire and air, all metals, except gold, ſilver and platina, may be reduced to a ſubſtance called a *calx*, and they are then ſaid to be calcined. The calx is heavier than the metal, owing to the pure air which is imbibed during the operation. Certain metals eaſily combine together; and hence they

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are uſed for *ſoldering*: Thus, *tin* is a ſolder for *lead*; *braſs*, *gold*, or *ſilver*, is a ſolder for *iron*.

382. Gold, ſilver, platina, and mercury, are called *perfect* metals, becauſe when calcined, they recover their phlogiſton without the addition of any phlogiſtic ſubſtance. Copper, iron, lead, and tin, are called *imperfect* metals, becauſe they cannot be entirely reduced without the addition of ſome phlogiſtic ſubſtance. All theſe however (even mercury when ſolid) are malleable to a certain degree. The other eight are called *ſemi*-metals, and are ſcarcely at all malleable.

383. *Gold* has a ſpecific gravity ſometimes as far as 19,64; and is ſoluble only in aqua regia. If expoſed to the utmoſt heat, it loſes none of its weight. In its native ſtate it is found in lumps, or in viſible grains mixed with ſand, or embodied in earths or ſtones. When pure, it is almoſt as ſoft as lead, and is neither elaſtic nor ſonorous; an alloy of ſilver and copper, each one part to 22 of pure gold, will make it as hard as our coin.

384. *Silver* when pure has a ſpecific gravity of 11,095; and is ſoluble in concentrated vitriolic acid with the aſſiſtance of heat, and in moderately diluted nitrous acid without heat. Native ſilver is found in a granular, lemellar, filamentous, capillary, abſorbent, or cryſtalized form, in various earths and ſtones. Alſo in ſeparate maſſes. Pure ſilver is too ſoft to be uſed without alloy. In the Britiſh coinage, 15 parts of ſilver are alloyed with one of copper.

385. *Platina* when pure has its ſpecific gravity very nearly 23. It is found only in the gold mines at *Peru*, and comes to us in the form of large ſmooth grains, of an irregular figure, intermixed with quartz, and a ferruginous ſand. It is ſoluble only in aqua regia, or dephlogiſticated marine acid; and is about as hard as ſteel.

386. *Mercury* in its pure ſtate has a ſpecific gravity of about 13,6, and its liquidity diſtinguiſhes it from all other metals. Native mercury is found flowing from a ſhiſtoſe or quartzy matrix, mixed with ſome other metals. In *Sweden* and *Germany* it is found united to ſilver in the form of a ſomewhat hard and brittle amalgam. It has alſo been found diffuſed through maſſes of clay, and ſome particular kind of ſtones. It is readily diſſolved in nitrous acid, and combines with almoſt all metalic ſubſtances.

387. *Copper* has a ſpecific gravity from 8,7 to 9,3. It is ſoluble in acids, alkalis, and neutral ſalts. Native copper is found either in grains, or in large ſolid lumps, or in a foliated, capillary, arboreſcent form, or cryſtalized in quadrangular pyarmids, or in clay, quartz, &c. It mixes with the other metals, and is conſiderably hard, and malleable. *Braſs* is a mixture of pure copper, with a fourth part of pure zinc. Copper mixed with tin, form *gun metal*. Copper alloyed with tin, make *bell-metal*. Copper and lead make *pot-metal*. *Bronze* is a compound of copper and tin, to which zinc is ſometimes added. *Pinchbeck* is a kind of braſs made in imitation of gold.

388. *Iron* has its ſpecific gravity from 7,6 to 8. It is ſoluble in all acids, and is more difficult to be fuſed than any of the metalic ſubſtances, platina and manganeſe excepted. Native iron exiſts in many places. Its ores are either purely calciform, as in ochres; or the calces are mixed with earths, as in ſpars, jaſper, &c. Or the iron is mineralized with ſulphur, as in pyrites. *Steel* is uſually made by cementation from the beſt forged iron, with matters of the inflammable kind. Caſt iron is not malleable, and ſo hard that a file will not touch it.

389. *Lead* has a ſpecific gravity from 11,3 to 11,479. It is more or leſs ſoluble in all acids; ſoft, and eaſy of fuſibility. Native lead is ſaid to have been found in *Monmouthſhire* in ſmall pieces, and in ſome other places. The ores of lead are moſtly found amongſt calcareous and ponderous earths. It is alſo found mineralized. By heat and air, lead is converted into *minium*, or red lead. The calces of lead are uſed for painting. Lead is uſed as a preparation of enamels, and of porcelain as a flux, and makes the baſis of the glazing of pottery wares.

390. Tin has its ſpecific gravity from 7 to 7,45. It diſſolves in ſpirit of ſalt or aqua regia; is not quite ſo ſoft as lead; and melts the moſt readily of all metals. Native tin has been found in *Cornwall* in the form of thin flexible laminæ iſſuing out of a matrix of quartz, or regularly cryſtalized. The ores of tin are generally calces of that metal in a cryſtalized form, bedded moſtly in a ſiliceous matrix. *Pewter* is a mixture of tin and lead.

391. *Regulus of antimony* in its pure ſtate has its ſpecific gravity 6,86. Its colour is a ſilvery white; very brittle; and is ſoluble in a conſiderable degree by ſeveral acids. The moſt common ore of this metal is antimony.

392. *Regulus of arſenic* has its ſpecific gravity 8,31. Its colour is bright yellowiſh white, but grows black by expoſure to the air. It is very brittle; is eaſily ſoluble in the nitrous acid; with more difficulty in the vitriolic; and ſcarce at all in the marine. The ores are found principally in Saxony. It is a ſtrong poiſon, and is ſoluble in 80 times its weight of water.

393. *Biſmuth* has its ſpecific gravity from 9,6 to 9,7. Its colour is reddiſh, or yellowiſh white, and it is very brittle. It is ſoluble in aqua regia; ſcarcely in the vitriolic acid; and ſtile leſs in the marine. Its ores are generally found mixed with cobalt.

394. *Cobalt* has its ſpecific gravity about 7,7. It is of a blueiſh grey colour; is very brittle; and its fuſibility is nearly as that of copper. Its calx melted with borax, pot-aſh, and white ſiliceous ſand, gives a blue glaſs. It is never found native.

395. *Nickel* has its ſpecific gravity from 7,421 to 9. Its colour is reddiſh white, and it is very hard; and its fuſibility is nearly as that of copper. It diſſolves in nitrous acid, and aqua regia. It is found native, and alſo with other metals.

396. *Regulus of manganeſe* has its ſpecific gravity 6,85. Its colour is duſky white; it is harder than iron, and very brittle; and is ſoluble in acids. It is not found native. If a globule of microcoſmic ſalt be melted on a piece of charcoal, and a ſmall piece of the black calx of this metal be added, it forms a blueiſh red glaſs.

397. *Molybdena* has its ſpecific gravity 5,69. It is of a lead colour, reſembling plumbago. No acids act on it, but the arſenical and nitrous.

398. Chrome, ſylvanite, titanium, and other newly diſcovered ſemi-metals, are rather objects of curioſity than of utility.

399. Mr. KIRWAN divides mountains into *intire*, *ſtratified*, *confuſed*, and *volcanic*.

400. *Intire* mountains are formed of ſtone, without any regular fiſſure, and moſtly homogeneous. They conſiſt of granite, flagſtone, limeſtone, gypſum, &c. and of iron ore.

401. *Stratified* mountains are thoſe which are regularly divided by joints or fiſſures.

402. *Confuſed* mountains, are thoſe of a confuſed ſtructure, conſiſting of all ſorts of ſtones heaped together, with ſand, clay and mica; but with ſcarcely any ores.

403 The ſtrata of which mountains conſiſt, are either *homogeneous*, or *heterogeneous*.

404. *Homogeneous* conſiſt chiefly of argillaceous ſtones, or ſiliceous; or of both, the one behind the other. Sometimes of limſtone; and ſometimes the argillaceous are covered with granite, and lava. Theſe mountains are alſo, the chief ſeat of metalic ores, running in veins and not in ſtrata.

405. *Heterogeneous* conſiſt of alternate ſtrata of ſtones, earths, metalic ores, and ſometimes lava, coal, bitumen and petrifactions are here found. Alſo, ſalts, gold in ſandy ſtrata, iron and copper in ſtrata, lead ore, &c.

406. *Volcanic* mountains appear to have ſome connection with the ſea, for they are generally in its neighbourhood. On the top there is a hollow like an inverted cone, called the crater, through which the lava generally paſſes; though ſometimes it burſts out on the ſides, and runs a red hot river of matter, or lava. Theſe eruptions are frequently attended with thunder, lightning, and earthquakes. In 1779 the lava of Mount Veſuvius almoſt deſtroyed the town of *Torre del Greco*, the inhabitants of which had ſcarcely time to ſave themſelves. From the immenſe quantity of matter thrown up at different times, without diminiſhing their apparent bulk, we may conclude the ſeat of theſe fires to be many miles under ground. The explosion and eruption of the melted matter probably arile from water getting down upon the fire, and then being converted into an elaſtic vapour, the force of which is known to be ſeveral thouſand times greater than that of gunpowder. If the ſuperincumbent weight be too great for the force, it then may produce earthquakes without an eruption. The ſubſtances ejected are, phlogiſticated, fixed, and inflammable air, water, aſhes, pumice ſtones, ſtones that have undergone no fuſion, and lava. Stones of 10 feet diameter are ſometimes thrown to great diſtances.

407. *Petrifactions* are of ſhells found on or near the ſurface of the earth; of fiſh deeper, and of wood the deepeſt. Thoſe ſubſtances which reſiſt putrefaction the moſt, are frequently found petrified; and thoſe that are moſt apt to putrify are ſeldom found petrified. Petrifactions are moſt commonly found in ſtrata of marl, chalk, or clay; but they ſometimes are found in gypſum, pyrites, ores of iron, copper and ſilver. They are formed in climates where their originals could not have exiſted.

408. WATER, perfectly pure, is tranſparent, without colour, taſte, or ſmell. When expoſed to a certain degree of cold, it becomes a ſolid; and when expoſed to a certain degree of heat, it is diſſipated in vapour. It is incompreſſible by any human force; but by heat and cold its bulk is increaſed and diminiſhed. In an open veſſel, it is incapable of receiving above a certain degree of heat: but in a confined veſſel, the heat may be increaſed beyond that. Till lately, water was thought a ſimple ſubſtance, but Mr. CAVENDISH has diſcovered that it is a compound of two airs, inflammable and dephlogiſticated, or vital air; for if theſe airs be burned together, water is produced, which is ſaid to be equal in weight to that of the quantities of air made uſe of; it is therefore ſuppoſed, that during combuſtion, the latent heat that maintained the ærial form is given out.

409. Rain is the pureſt natural water. But water has the capacity of holding in ſolution a variety of ſubſtances, as earths, ſalts, and metals; and the water of ſprings receives its name from the ſubſtance it holds in ſolution. Theſe waters however may be obtained pure by diſtillation. The ſubſtances held in ſolution by water, are;

410. *Fixed air.* This gives a briſkneſs to waters, ſimilar to that of fermenting liquors, which is chiefly obſerved when the water is poured from one veſſel to another It is very volatile, and eſcapes when the water is expoſed to the air.

411. *Vitriolic, nitrous, and muriatic acid.* One or other of theſe exiſt in almoſt all mineral waters; but ſometimes the vitriolic exiſts in a ſeparate ſtate, and gives the water an acidity.

412. *Alkaline ſalt.* This is found in many waters in Hungary, Tripoli, and other countries. It is uſually the foſſil alkali which is combined with fixed air in the *Seltzer* waters; and with the mineral acids in others. The vegetable and volatile alkalis rarely are found in mineral waters.

413. *Neutral ſalts.* Theſe are not uncommon in ſprings. Common ſalts, nitre, and vitriolated magneſia, are moſt uſual; the latter abounds in a ſpring at *Epſom*, and is called Epſom ſalt. Sal amoniac is found in ſprings in the neighbourhood of volcanoes, and burning coal mines.

414. *Earthy ſubſtances.* The calcareous earth is commonly found united with the vitriolic acid. Calcareous nitre and muriated calcareous earth are alſo found in ſprings. Waters containing only earth, or ſelenites, are called *hard*, and do not diſſolve ſoap well.

415. *Sulphur.* Many waters by their ſmell ſeem to contain ſulphur, though very few of them are found to afford it. Theſe waters are generally impregnated with a ſulphureous gas.

416. *Metals.*

416. *Metals.* Of theſe, iron is moſt frequent, and forms what is called the *Chalybeate* waters, and theſe are very common. Some waters contain copper, and more rarely zinc. Sea water contains, beſides earthy and ſelenitic matters, a large quantity of mineral ſalts.

417. Of ſprings containing theſe waters, ſome are *cold*, and ſome are *hot*, ſometimes almoſt to a degree of boiling. Mr. TISSINGTON obſerves, that waters flowing through a blue marl filled with pyrites, are warm; and Mr GUETTARD has remarked, that all the hot mineral ſprings in *France* flow through ſhiſtus. Hence, there is no occaſion to derive their heat from any ſubterraneous volcano, as the heat may be acquired by the waters waſhing the pyrites, and other like minerals, in a ſtate of ſpontaneous decompoſition, during which they always acquire a conſiderable heat.

418. Sea water has been obſerved to contain more ſalt in hot than in cold climates. The quantity of common ſalt in ſea water, is to the quantity of water, as 3 or 4 to 100; the water is therefore far from being ſaturated, for water is capable of diſſolving nearly a fourth part of its weight of ſalt. Common ſalt is obtained from ſea water by evaporation, the water thus eſcaping and leaving the ſalt behind. The water which eſcapes is freſh. Hence, ſea water may be rendered freſh, by adapting a tube to the lid of a common kettle, and condenſing the ſteam in a hogſhead as a receiver. Thus freſh water may be obtained at ſea.

419. We will briefly note the compoſition of the waters in ſome of the moſt remarkable ſprings.

420. *Aix-la-Chapelle.* The waters here are hot and ſulphureous. Their taſte is ſaline, bitter, and urinous. A gallon of this water contains 2 ſcruples of ſea ſalt, the ſame quantity of chalk, and 1½ dram of foſſil alkali. They are generally cathartic and diuretic, and promote perſpiration. Their heat is from 106° to 130° of FAHRENHEIT's thermometer.

421. *Bath.* The waters here are hot; but have different degrees of heat in the different baths, of which there are ſix; the nature of the water however is the ſame in all. The principal baths are the *King*'s bath, the *Queen*'s bath, and the *Croſs* bath. The two former raiſe the thermometer to 116°, and the latter to 111°. The water has a ſlight ſaline, bitteriſh, and chalybeate taſte and ſometimes a ſmall degree of ſulphureous ſmell. One gallon of this water contains 23 grains of chalk, the ſame quantity of muriat of magneſia, 38 grains of ſea ſalt, and 8,1 grains of ærated iron. The water operates powerfully as a diuretic, and promotes perſpiration. If drunk at once in large quantities, it ſometimes purges; but in ſmall quantities it has a contrary effect.

422. *Briſtol.* The ſprings are here called the *Hotwells.* The water at its origin is warm, and ſparkling. It has no ſmell, and is pleaſant to the taſte. It raiſes the thermometer from 70° to 80°. One gallon contains 12¾ grains of chalk, 5¾ grains of muriat of magneſia, and 6½ grains of ſea ſalt.

423. *Buxton.* The hot bath here raiſes the thermometer to 81° or 82°. It has a pleaſant taſte, and contains a little calcareous earth, with a ſmall quantity of ſea ſalt, and a very ſmall portion of cathartic ſalt. There is alſo a cold chalybeate water.

424. *Cheltenham.* The water here is a cathartic chalybeate, a gallon of which contains 8 drams of cathartic ſalt, partly vitriolated natron, partly vitriolated magneſia; 25 grains of magneſia, partly united with marine, and partly with aerial acid; and nearly 5 grains of iron combined with aerial acid; it yields alſo 24 ounce meaſures of fixed air, and 8 of azotic and hepatic air.

425. *Harrowgate.* Here are four ſprings nearly alike, except in the ſaline matter; of the three old ones, the higheſt contains 3 ounces of ſolid matter, the loweſt 1½ ounce, and the middle one ½ ounce; of the fourth, 140 grains are earth. The water is clear and ſparkling, and has a ſtrong ſmell of ſulphur, with a ſalt taſte, as it contains ſea ſalt, a little marine ſalt of magneſia, and calcareous earth. When taken plentifully, the water is cathartic.

426. *Matlock.* Here are ſeveral ſprings of warm water ſlightly impregnated with iron. Its heat is about 69°.

427. *Scarborough.* The waters here are chalybeate and cathartic. There are two wells. In one, one gallon of water contains 52 grains of calcareous earth, 2 of ochre, and 266 of vitriolated magneſia; in the other, it contains 70 grains of calcareous earth, 139 of vitriolated magneſia, and 11 of ſalt water. The waters have a briſk, pungent, chalybeate taſte, at both the fountains; but at one, called the cathartic, the water taſtes bitteriſh, which is not the caſe with the other, called the chalybeate.

428. *Pyrmont.* This is a briſk chalybeate, abounding in fixed air; and when taken from the fountain, ſparkles very much; it has a fine, pleaſant, vinous taſte, and a little ſulphureous ſmell. A gallon contains 46 grains of chalk, 15,6 of magneſia, 30 of vitriolated magneſia, 10 of ſea ſalt, and 2,6 of ærated iron. This water is diuretic, ſudorific, and in large quantity it is cathartic.

429. At *Geyſer, in Iceland*, there ſprings up a hot water, which, upon cooling, depoſits ſiliceous earth; the water is thrown to the height of 90 feet, and after its fall, its heat is 212°.

430. About 60 yards from the ſhore of the iſland of *Lybia*, at a place called *St. Angelo*, a column of boiling water bubbles on the ſea, and communicates its heat to the waters about it. It boils in winter and ſummer, and is of great uſe to the inhabitants in bending their planks for ſhip building. The fiſhermen alſo here boil their fiſh. Near the ſhore of this iſland, Sir. W. HAMILTON found, when bathing in the ſea, many ſpots where the ſand was ſo intenſely hot, as to oblige him to retire quickly.

431. Water heated to 212°, when the barometer is at 29½, flies off in ſteam, and becomes an elaſtic fluid, at leaſt 800 times rarer than air. This elaſtic fluid is the moſt powerful agent that can be employed in working machines. The ſteam may be reduced back to water, by projecting cold water amongſt it. Upon the principle of generating ſteam and then deſtroying it, the ſteam engine is founded. When the

the ſteam is admitted under the piſton, the piſton is forced up; and when the ſteam is deſtroyed by projecting water up into the tube in which the piſton works, the piſton deſcends by the weight of the atmoſphere preſſing upon it. And ſo alternately, as long as the engine works.

432. AIR. Common atmoſpherical air is an elaſtic fluid, inviſible, inſipid, inodorous, and ſonorous. According to the preſent doctrine of chemiſtry, it is principally compoſed of two airs, *dephlogiſticated*, or *vital* air, and *phlogiſticated* air. But beſides theſe, the common air muſt be combined with other airs ariſing from fermentation, putrefaction, &c. and various other ſubſtances. Dephlogiſticated air was diſcovered by Dr. PRIESTLY, and is the pure part of the atmoſphere, or that part which is fit for reſpiration. Phlogiſticated air is totally unfit for reſpiration, as no animal can live in it. Dr. PRIESTLY moiſtened various earthy ſubſtances, as minium, chalk, clay, &c. with ſpirits of nitre, and by diſtillation he produced an air; and he conſiders this air, which he calls *dephlogiſticated* air, as one of the conſtituent parts of the atmoſphere; and that the other conſtituent parts are *earth* and as much *phlogiſton* as is neceſſary to its elaſticity, and to render the air as pure as it is uſually found. M. LAVOISIER found, that a mixture of 72 parts of phlogiſticated, and 28 parts of dephlogiſticated air, made a fluid like to our atmoſpherical air; and he concluded that the atmoſphere was a mixture of theſe two airs: for by applying ſubſtances which have an affinity to vital air, the portion of this fluid which is in the atmoſpherical air, is abſorbed, and the reſidium is phlogiſticated air. Other chemiſts ſuppoſe that it is not a mere mixture, but a chemical compound; for as the vital air is of greater ſpecific gravity than the phlogiſticated, they ought to ſeparate, if it was only a mixture, the vital air remaining below, being of the greater ſpecific gravity, and the other aſcending. But this is not found to take place. The French chemiſts conſider dephlogiſticated air as conſiſting of a baſis called oxygene, or the acidifying principle, combined with fire. That an acid is contained in the air, is probable from the change of colour induced on the tincture of turnſole by the electric ſpark paſſing through air in contact with that liquor. And this alſo ſhows, that the electric ſpark decompoſes the air, and diſengages the acid. Common air is alſo found to diſſolve ſeveral earthy and metalic ſubſtances; indicating thereby an acidity.

433. Vital air is ſo called, becauſe it is peculiarly neceſſary for reſpiration; for animals will live much longer in this air than in the common air. All perſons who have reſpired vital air, agree, that it communicates a gentle vivifying heat to the lungs, which inſenſibly extends to all parts of the body. And animals will live four or five times as long in this air, as in common air. But all animals die in phlogiſticated air. Vital air is alſo neceſſary for combuſtion; for when bodies burn in common air, it is the vital part which aſſiſts combuſtion; for there is no combuſtion without this air. If you plunge a lighted candle into a veſſel filled with this air, the flame becomes more ardent and bright, and the combuſtion is four times more rapid. Phlogiſticated air is unfit for combuſtion. That air therefore which is neceſſary for the ſupport of life, is alſo neceſſary for the ſupport of fire; and that air which is deſtructive of the former, is alſo unfit for the latter.

434. Air is neceſſary for vegetation, or the life of plants. For plants will not grow in vacuo. Dr. PRIESTLY diſcovered, that plants will not only grow in confined air, but alſo in air vitiated by burning and reſpiration, and that ſuch air was meliorated by vegetation, and thence concluded, that vegetation was employed by nature as one mean of purifying the air, which muſt be continually corrupted by reſpiration, putrefaction, and combuſtion. M. INGENHOUSZ has purſued this ſubject by a courſe of experiments, and eſtabliſhed the following facts:

435. All plants poſſeſs a power of correcting foul air unfit for reſpiration; but this happens only in clear day light, or in the ſun-ſhine.

436. All plants yield a certain quantity of dephlogiſticated air in the day time, when growing in the open air, and free from ſhade.

437. Plants evaporate bad air by night, and fouls the common air which ſurrounds them; but this is far over-balanced by their beneficial operation in the day.

438. Hence he concludes, that the faculty which plants have of yielding dephlogiſticated air, of correcting foul air, and improving ordinary air, is not owing to vegetation, as ſuch: for if it were, plants would exert this faculty at all times, and in all places, where vegetation goes on; which is not the caſe. A plant may thrive well in darkneſs, and ſpread round its deleterious exhalations, and have no power to correct the badneſs of the air. This operation of correcting bad air, he imputes to the influence of the light of the ſun upon the plant. He ſhows, however, that the light of the ſun by itſelf, without the aſſiſtance of plants, does not improve air, but rather renders it worſe. He found alſo, that plants have the faculty of abſorbing air, then of elaborating it, and pouring out pure vital air; but that this takes place only in the day. He alſo eſtabliſhed theſe facts:

439. That flowers ooze out an unwholeſome air by day and by night, and ſpoil a conſiderable body of air about them.

440. That all fruits exhale a deleterious air by day and by night, and ſpread a poiſonous quality through the ſurrounding air.

441. That the roots of plants, when kept out of the ground, yield, in general, bad air, and ſpoil common air at all times, ſome few excepted.

442. That dephlogiſticated air from the leaves of plants, does not exiſt in that ſtate in the plant, but that the air within the leaves is purified, and the pure part eſcapes.

443. It appears probable, that one of the great laboratories of nature for purifying the air, is placed in the leaves

leaves of trees and vegetables, and put in action by the influence of the light; and that the air thus purified is grown useless or noxious to the plant, and is thrown out principally by the excretory ducts, placed, for the most part, on the under side of the leaves; and this air being heavier than common air, it descends, and meliorates the air in which we breathe. But most foul airs are lighter than common air, and therefore they ascend, and escape us. These are striking instances of the wisdom and benevolence of Providence. The influence of the vegetable creation ceases in winter; but this loss is amply compensated by the diminution of the general cause of corruption, viz. Heat; as heat greatly promotes putrefaction.

444. Dr. PRIESTLY discovered that plants thrive better in foul than in vital air; and by their having the power to correct bad air, and give out again the pure part, it follows, that the vegetable kingdom is subservient to the animal; and that air rendered noxious by animal respiration, serves to plants as a kind of nourishment.

445. The air which we breathe is rendered unfit for respiration, by receiving a portion of fixed air, which is generated in our body. We consume, by each inspiration, about 30 cubic inches of air.

446. By the experiments of Dr. HALES, we know that all bodies contain a great quantity of air in a fixed, non-elastic state; and this air is rendered elastic, and expelled from the body, by heat. He found, that from a cubic inch of heart of oak, was generated 216 cubic inches of air, the weight of which was $\frac{1}{4}$ of the weight of the oak. A cubic inch of Newcastle coal gave out 360 cubic inches of air, which is nearly $\frac{1}{3}$ of the weight of the coal. As air therefore constitutes so considerable a part of some bodies, it seems that the state in which it exists in the body, may be that of a solid, and may serve as a cohesion for the other parts. There seems to be nothing in this supposition inconsistent with other properties of air, as we know that the mixtures of two airs will produce water. That the air in the body must have been in a non-elastic state, is manifest from hence, that, in the last instance, if the air which was expanded into an elastic fluid of at least 360 times its original bulk, should be compressed again into its original bulk, its elasticity would be increased 360 times, in which state, its force would be sufficient to rend a body, in which it might be confined, to atoms. With the original density, therefore, it must have existed in a state of non-elasticity.

447. The airs thus produced from bodies by distillation, fermentation, &c. have different properties according to the different bodies. There is what is called the *vinous* air, arising from vegetables; *calcareous* air, or air from calcareous earths; this is called *fixed* air; *vitriolic acid* air, arising from a mixture of vitriolic acid and inflammable substances; *inflammable* air, arising from a mixture of water, vitriolic acid, and zinc, iron, &c. And airs are formed from various other combinations of substances, from which the airs take their name. The inflammable air is that with which balloons are filled. A mixture of this and common air will take fire. It is 10 times lighter than the common air. All the airs thus generated, called *nitrious* airs, are noxious; but most of them being lighter than common air, they ascend in the atmosphere as soon as they are formed.

448. VEGITATION. Mr HALES, in his *vegetable statics*, has made a great number of experiments in order to establish the principles of vegetation; we shall therefore here give the result of his enquiries; with some further observations on plants, and the analogy between them and the animal creation.

449. The substance of vegetables is composed of sulphur, volatile salt, water, earth, and air.

450. Water and air enter by the roots and ascend in the respective tubes, the water forming the sap; and nature has taken care to cover the roots with a very fine thick strainer, that nothing can be admitted into them but what can readily be carried off by perspiration, vegetables having no other provision for discharging their recrement.

451. The elastic aereal fluids distend each ductile part, and by enlivening and invigorating the sap, and mixing with the other principles, they, by heat and motion, assimulate into the nourishment of the respective parts. While in this nutritive state, by the gradual cohesion of the constituent particles, they are at length formed into a firmly compacted body.

452. The sap rises all winter, but in a smaller degree than in the summer. And the perspiring matter of trees is rather actuated by warmth, and so exhaled, than protruded by the sap upwards.

453. The air enters into the vegetable, not only by the roots, but also by the trunk and leaves, especially at night, when they are changed from an expiring to an imbibing state. Part of the nourishment of vegetables arises also from the leaves plentifully imbibing dews and rain, which contain salt, sulphur, &c the air being impregnated with these substances.

454. Leaves are also instrumental in drawing nourishment from the roots, and furnishing the young shoots with nutriment. They also contain the main excretory ducts, and separate and carry off the redundant watery fluid, which by being long detained, would turn rancid, and be prejudicial to the plant; thus leaving the more nutritive parts to coalesce.

455. The use of leaves, which are placed just where the fruit joins to the tree, is to bring nourishment to the fruit; accordingly we find that the leaves, next adjoining to blossoms, are, in the spring, very much expanded, when the other leaves on barren shoots are but beginning to shoot: So provident is nature in making timely provision for nourishing the embryo fruit. The pedals of leaf-stalks are also placed where nourishment is wanted to produce leaves, shoots, and fruit; and some such thin leafy expansion is so necessary for this purpose, that nature provides small thin expansions, which may be called primary leaves, that serve to protect and draw

nourishment

nourifhment to the young fhoot and leaf-buds, before the leaf itfelf is expanded.

456. A dilating fpongy fubftance, by equally expanding itfelf every way, would not produce a long ſlender fhoot, but rather a globofe one; to prevent which, nature has provided feveral diaphragms, befides thofe at each knot, which are placed at fmall diſtances acrofs the pith, thereby preventing its too great lateral dilatation. We may alſo obſerve, by the bye, that nature makes uſe of the ſame artifice in the growth of the feathers of birds.

457. The great quantity of moiſture perſpired by the branches of trees, during the cold winter ſeaſon, ſhows the reaſon why a long ſeries of cold north-eaſterly winds blaſts the bloſſoms and tender fruit, the moiſture exhaling faſter than it can be ſupplied by the trees. Hence the uſe of ſnow in covering the leafy ſpires of corn, in ſuch weather.

458. The proof we have of the utility of leaves in drawing up the ſap, and the care nature takes in furniſhing the twigs with plenty of them, principally near the fruit, may inſtruct us, on one hand, not to be too laviſh in pruning them off, and to be careful to leave ſome on the branch beyond the fruit; and on the other hand, to be careful to cut off all ſuperfluous ſhoots, as they draw away a great quantity of nouriſhment. Thus far Mr. HALES.

459. When a ſeed is ſown in a reverſed poſition, the young root turns downwards and enters the earth, and the ſtem bends upwards into the air. Confine a ſtem to an inclined poſition, and its extremity will ſoon aſſume a perpendicular poſition. Turn a branch ſo that the under ſide of the leaves may be upward, and the leaves will ſoon regain their natural poſitions. Many leaves follow the motion of the ſun; in the morning their ſuperior ſurfaces are towards the eaſt; at noon, towards the ſouth; at evening, towards the weſt; and during the night, or in rainy weather, theſe leaves are horizontal, with their inferior ſurfaces towards the earth. What is called the ſleep of plants, affords another inſtance of vegetable motion. The leaves of many plants fold up in the night, and open again in the day. And it is worthy of remark, that they all diſpoſe themſelves ſo as to give the beſt protection to the young ſtems, flowers, buds, or fruit. Many flowers have alſo the power of moving. During the night, many of them are encloſed in their calixes. Some flowers, when aſleep, hang their mouths towards the earth, to prevent the noxious effects of rain or dew. If a veſſel of water be ſet within ſix inches of a growing cucumber, the direction of its branches will ſoon tend towards the water. When a pole is placed at a conſiderable diſtance from an unſupported vine, the branches will ſoon tend towards the pole, and twiſt about it. The ſenſitive plant poſſeſſes the faculty of motion in a remarkable degree; the ſlighteſt touch makes its leaves ſuddenly ſhrink, and, together with the branch, bend towards the earth. Theſe circumſtances tend to prove, that plants are endowed with *irritability*.

460. The ſtructure of plants, like that of animals, conſiſts of a ſeries of veſſels diſpoſed in a regular order. The œconomy and functions of vegetables, as well as thoſe of animals, are the reſults of a vaſcular texture. The pith, or medullary ſubſtance of plants, reſembles the ſpinal marrow of animals; and when the texture of either is deſtroyed, the plant or animal dies. The round barks of animals conſiſt of concentric ſtrata, which are eaſily to be ſeparated: and the wood of plants conſiſts of concentric layers of hardened veſſels, which ſeparate when macerated in water. A tree acquires an additional ring every year, and thus its age may be pretty accurately obtained. Animals and vegetables gradually expand from an embryo ſtate, and ſooner or later arrive at perfection. Some parts of animal bodies partake of the nature of vegetables. Thus, the hair, the nails, the beak, and the horn, are a ſpecies of vegetables, as appears from their total inſenſibility. There is a ſtriking analogy between the eggs of animals and the ſeeds of plants. When placed in proper ſituations, they both produce young, ſimilar to their parents. There is alſo a great ſimilarity in the ſtructure and uſes of their reſpective organs. Many animals have ſeaſons peculiar to their reſpective kinds. Some animals produce in the ſpring; others in autumn; and others in winter. And particular vegetables alſo have their reſpective ſeaſons. And thus nature has wiſely ordained, that the earth ſhould always be covered with plants. Hence, by taking a general ſurvey of the vegetable and animal kingdoms, it appears, that nature in their formation has operated upon one and the ſame great principle and model.

On Meaſures.

461. In ſettling the meaſures of different nations in reſpect to their relative values, we have followed what we judged to be the beſt authorities, and where we could procure different meaſures to which we could attach equal credit for accuracy, we have taken the mean; we truſt therefore that the following tables will exhibit the values of ancient and foreign meaſures with as much accuracy as the nature of the ſubject will admit of. The Grecian long meaſures were principally taken from the human body. Thus Δακτυλος is a finger's breadth; Δωρον a hand's breadth, or four fingers; Ορθοδωρον the length of the hand from the upper part to the extremity of the longeſt finger; Σπιθαμη the length of the hand between the thumb and little finger; Πους the foot; Πηχυς from the elbow to the extremity of the fingers; Πυγων from the elbow to the ſecond joint of the fingers; Πυγμη from the elbow with the fingers clapſed; Οργυια from the extremity of one middle finger to the extremity of the other, the arms being extended. In theſe meaſures they were followed by the Romans, who have *digitus*, *palmipes*, *palmus*, *pes*, *paſſus*, *ulna*, *cubitus*, &c.

English Measures of *Length*.

Inches.	Palms.	Spans.	Feet.	Cubits.	Yards.	Paces.	Fathoms.	Poles.	Furlongs.	Mile.
3										
9	3									
12	4	$1\frac{1}{3}$								
18	6	2	$1\frac{1}{2}$							
36	12	4	3	2						
60	20	$6\frac{2}{3}$	5	$3\frac{1}{3}$	$1\frac{2}{3}$					
72	24	8	6	4	2	$1\frac{1}{5}$				
198	66	22	$16\frac{1}{2}$	11	$5\frac{1}{2}$	$3\frac{3}{10}$	$2\frac{3}{4}$			
7920	2640	880	660	440	220	132	110	40		
63360	21120	7040	5280	3520	1760	1056	880	20	8	

Alſo, 4 inches=1 hand; 3 miles=1 league; and 60 geographical miles=1 degree=69,2 Engliſh miles.

462. The Scotch *Elwand* is divided into 37 inches, and is found equal to $37\frac{1}{2}$ Engliſh inches; therefore a Scotch inch and foot are to the Engliſh, as 185 to 180. Itinerary meaſure is the ſame in Scotland as in England. The length of the chain is 4 poles, or 22 yards; and 80 chains make a mile. The old Scotch computed miles were about $1\frac{1}{2}$ Engliſh miles.

463. The Engliſh *Ell* is $1\frac{1}{4}$ yard and is uſed in meaſuring linens imported from Germany and the low countries.

464. An Engliſh fathom is to a French toiſe, as 1000 to 1065,75. The toiſe contains 6 feet; the foot contains 12 inches; and the inch contains 12 lines. As the fathom and toiſe contain the ſame number of feet, an Engliſh foot is to a French foot, as 1000 to 1065,75.

English *Square* Meaſures.

Inches.	Feet.	Yards.	Paces.	Poles.	Roods.	Acre.
144						
1296	9					
3600	25	$2\frac{7}{9}$				
39204	$272\frac{1}{4}$	$30\frac{1}{4}$	10,89			
1568160	10890	1210	435,6	40		
6272640	43560	4840	1742,4	160	4	

465. Land is meaſured by a chain, called *Gunter's* chain, from the inventor; its length is 4 poles=22 yards =66 feet. It conſiſts of 100 equal links, each of which is therefore 7,92 inches. Land is eſtimated in acres, roods and perches. An acre contains 10 ſquare chains; therefore 10 chains in length, and 1 in breadth, make an acre, the form being ſuppoſed that of a rectangled parallelogram. A rood is one-fourth of an acre; and a perch is the fortieth part of a rood, or it is a ſquare pole. Hence, an acre contains $10\times1=10$ ſquare chains $=40\times4=160$ ſquare poles $=220\times22=$ 4840 ſquare yards $=1000\times100=100000$ ſquare links. Alſo, 625 ſquare links=1 ſquare pole, or a perch; 40 perches=1 rood; 4 roods=1 acre. A ſquare mile contains 640 acres. A *hide* of land, mentioned in the earlier part of our hiſtory, contained about 100 acres.

466. In *Scotland*, the meaſure of the land is regulated by the ell: 36 ſquare ells=1 fall; 40 falls=1 rood; 4 roods=1 acre. The Scotch acre is to the Engliſh, as 10000 to 7869. The length of the chain uſed in Scotland for meaſuring land, is 24 ells=72 feet.

467. In *ſolid* meaſure, 1728 inches=1 foot; and 46656 inches=27 feet=1 yard.

468. In *wine* meaſure, $28\frac{7}{8}$ ſolid inches=1 pint; and 231 inches=8 pints=1 gallon.

469. In *ale* meaſure, $35\frac{1}{4}$ ſolid inches=1 pint; and 282 inches=8 pints=1 gallon.

470. In *dry* meaſure, $33\frac{3}{5}$ ſolid inches=1 pint; and $268\frac{4}{5}$ inches=8 pints=1 gallon.

471. In *Wincheſter* corn meaſure, $34\frac{3}{5}$ ſolid inches=1 pint; and $272\frac{2}{5}$ inches=8 pints=1 gallon; alſo, 8 gallons=1 buſhel.

472. The *Scotch* quart contains 210 ſolid inches.

473. *Forty* feet of hewn, and *fifty* of unhewn timber, make a load.

Ancient ROMAN Meaſures of *Length*.

									Engl. Yds.	Ft.	Inches.
Digitus tranſverſus,									0.	0.	0,7266
$1\frac{1}{3}$	Uncia,								0.	0.	0,9688
4	3	Palmus minor,							0.	0.	2,90639
16	12	4	Pes,						0.	0.	11,62556
20	15	5	$1\frac{1}{4}$	Palmipes,					0.	1.	2,53195
24	18	6	$1\frac{1}{2}$	$1\frac{1}{5}$	Cubitus,				0.	1.	5,43834
40	30	10	$2\frac{1}{2}$	2	$1\frac{2}{3}$	Gradus,			0.	2.	5,0639
80	60	20	5	4	$3\frac{1}{3}$	2	Paſſus,		1.	1.	10,1278
10000	7500	2500	625	500	$416\frac{2}{3}$	250	125	Stadium,	201.	2.	5,975
80000	60000	20000	5000	4000	$3333\frac{1}{3}$	2000	1000	8 Milliare,	1614.	1.	11,8

Of theſe meaſures, the digit, inch, palm, foot, cubit and pace, were in uſe amongſt the architects; the foot, pace, ſtadium and mile, amongſt the geographers.

474. Of the ancient Roman *ſuperficial* meaſure, the *jugerum*, or acre, was the unit; and this, like the *As*, *Libra*, or any other integer, they divided as follows, the jugerum being a unit anſwering to the *As*, and containing in Roman and Engliſh ſquare meaſure

As

	Feet.	Scruples.	Engl. Roods.	Poles.	Feet.
As - -	28800	288	2	18	250,05
Deunx - -	26400	264	2	10	183,85
Dextans - -	24000	240	2	2	117,64
Dodrans - -	21600	216	1	34	51,42
Bes - -	19200	192	1	25	257,46
Septunx - -	16800	168	1	17	191,25
Semis - -	14400	144	1	9	125,03
Quincunx - -	12000	120	1	1	58,82
Triens - -	9600	96	0	32	264,85
Quadrans - -	7200	72	0	24	198,64
Sextans - -	4800	48	0	16	132,43
Uncia - -	2400	24	0	8	66,21

The *Actus major* was 14400 feet equal to a *femis*. The *Clima* was 3600 feet equal to a *ſeſcuncia*. The *Actus minimus* was 4800 feet equal to a *ſextans*. *Actus* is the length of one furrow, or ſo far as the plough goes before it turns, in length 120 feet. A Scruple contains 100 ſquare feet.

The GRECIAN Meaſures of *Length*.

											Engl. Yds.	Ft.	Inches.
Digit, - - - - - - - - -											0.	0.	0,75581
4	Doron, Dochme, - - - - - - - - -										0.	0.	3,02324
10	$2\frac{1}{2}$	Lichas, - - - - - - - -									0.	0.	7,5531
11	$2\frac{3}{4}$	$1\frac{1}{10}$	Orthodoron, - - - - - - -								0.	0.	8,31392
12	3	$1\frac{1}{5}$	$1\frac{1}{11}$	Spithame, - - - - - -							0.	0.	9,06973
16	4	$1\frac{3}{10}$	$1\frac{5}{11}$	$1\frac{1}{3}$	Foot, - - - - - -						0.	1.	0,09297
18	$4\frac{1}{2}$	$1\frac{4}{5}$	$1\frac{7}{11}$	$1\frac{1}{2}$	$1\frac{2}{5}$	Cubit, - - - -					0.	1.	1,60459
20	5	2	$1\frac{9}{11}$	$1\frac{2}{3}$	$1\frac{1}{2}$	$1\frac{1}{6}$	Pygon, - - -				0.	1.	3,11621
24	6	$2\frac{2}{5}$	$2\frac{2}{11}$	2	$1\frac{1}{2}$	$1\frac{1}{3}$	$1\frac{1}{5}$	Cubit larger, - -			0.	1.	6,13945
96	24	$9\frac{3}{5}$	$8\frac{8}{11}$	8	6	$5\frac{1}{3}$	$4\frac{4}{5}$	4	Pace - -		2.	0.	0,5578
9600	2400	960	$872\frac{8}{11}$	800	600	$533\frac{1}{3}$	480	400	100	Stadium, -	201.	1.	7,78
76800	19200	7680	$6981\frac{9}{11}$	6400	4800	$4266\frac{2}{3}$	3840	3200	800	8 Mile, -	1612.	1.	2,24

475. The ſtadium contained 125 geometrical paces, or 625 *Roman* feet, and anſwered to our furlong. There were however ſtadia of different lengths, according to different times and places. This has rendered many of the recorded Grecian meaſures ſubject to uncertainty. They had a ſtadium of 10 to the mile, equal to 161,0348 yards, and another, or Macedonian, equal to 115,9595 yards.

476. The Grecian *ſquare* meaſure was the *plethron*, or acre, containing, according to ſome, 1444, or according to others, 10000 ſquare feet; and the *aroura*, which was half the *plethron*. The *Egyptian* aroura was the ſquare of 100 cubits.

Scripture Meaſures of *Length*.

								Engl. Yds.	Ft.	Inches.
Digit,								0.	0.	0,912
4	Palm,							0.	0.	3,648
12	3	Span,						0.	0.	10,944
24	6	2	Cubit,					0.	1.	9,888
96	24	8	4	Fathom,				2.	1.	3,552
144	36	12	6	$1\frac{1}{2}$	Ezekiel's Rod,			3.	1.	11,328
192	48	16	8	2	$1\frac{1}{3}$	Arabian Pole,		4.	2.	7,104
1920	480	160	80	20	$13\frac{1}{3}$	10	Schænus, or Meaſuring Line.	48.	1.	11,04

The longer Scripture Meaſures.

							Eng. Miles.	Yards.	Feet.
Cubit,							0.	0.	1,824
400	Stadium,						0.	243.	0,6
2000	5	Sabbath Day's Journey,					0.	1216.	0,
4000	10	2	Eaſtern Mile,				1.	672.	0,
12000	30	6	3	Paraſang,			4.	256.	0,
96000	240	48	24	8	A Day's Journey,		33.	288.	0,

477. The Eaſt uſed another ſpan equal to one third of a cubit.

478. The above are ſacred meaſures, in the lengths of which there muſt neceſſarily be ſome degree of uncertainty. Arbuthnot makes the ſacred cubit=1,7325 feet. He alſo obſerves, that the Jews ſometimes made uſe of a profane cubit, the length of which he determined to be 1,485 feet

The

The Length of Long Meaſures of Various Countries, in Terms of Engliſh Feet and Inches.

		Ft.	Inches.			Ft.	Inches.
Ancient Roman	Foot	0.	11,626	Rynland, or Leyden	Ell	2.	3,120
Greek	do.	1.	0,090	Frankfort	do.	1.	9,912
Arabic	do.	0.	10,544	Hamburgh	do.	1.	10,860
Alexandria	do.	1.	2,112	Leipſic	do.	2.	3,120
Paris	do.	1.	0,789	Lubeck	do.	1.	10,896
Rynland, or Leyden	do.	1.	0,361	Noremburgh	do.	2.	2,724
Amſterdam	do.	0.	11,304	Bavaria	do.	0.	11,448
Antwerp	do.	0.	11,352	Vienna	do.	1.	0,636
Dort	do.	1.	2,208	Bononia	do.	2.	1,764
Bologne	do.	1.	2,974	Dantzic	do.	1.	10,836
Turin	do.	1.	8,222	Florence	Brace, or Ell	1.	10,956
Venice	do.	1.	1,677	Spaniſh	Palm	0.	9,012
Padua	do.	1.	4,866	Genoa	do.	0.	9,960
Vienna	do.	1.	0,444	Naples	do.	0.	10,316
Sweden	do.	1.	2,701	Modern Roman	do.	0.	8,798
Lorrain	do.	0.	11,496	Spaniſh	Vare	3.	0,040
Middleburgh	do.	0.	11,892	Liſbon	do.	2.	9,000
Straſburgh	do.	0.	11,040	Gibralter	do.	2.	9,120
Bremen	do.	0.	11,568	Toledo	do.	2.	8,220
Cologn	do.	0.	11,448	Caſtile	do.	2.	8,949
Frankfort ad Mænum	do.	0.	11,376	Naples	Brace	2.	1,200
Spaniſh	do.	1.	0,012	Naples	Canna	6.	10,560
Toledo	do.	0.	10,788	Milan	Calamus	6.	6,528
Bononia	do.	1.	2,448	Florence	Braccio da Panna	1.	10,954
Mantua	do.	1.	6,838	Ruſſia	Archine	2.	4,242
Dantzic	do.	0.	11,328	Rome	Palmodi Archtetti	0.	8,784
Copenhagen	do.	0.	11,580	Parma	Cubit	1.	10,392
Riga	do.	1.	9,972	China	do.	1.	0,192
Prague	do.	1.	0,312	Cairo	do.	1.	9,888
Lyons	Ell	3.	11,604	Old Babylonian	do.	1.	6,240
Bologna	do.	2.	0,912	Turkiſh	Pike larger	2.	2,400
Amſterdam	do.	2.	3,228	Turkiſh	Pike ſmaller	2.	1,572
Antwerp	do.	2.	3,276	Perſian	Ariſh	3.	2,364

The Length of Miles, Leagues, &c. Ancient and Modern, in Engliſh Yards.

	Yards.
Ancient Roman mile	1610,348
Olympic ſtadium=$\frac{1}{8}$ of ancient Roman mile	201,2935
Stadium=$\frac{1}{10}$ of ancient Roman mile	161,0348
Stadium=to the 1100th part of a degree	111,2
Jewiſh riſin, of which $7\frac{1}{2}$=ancient Roman mile	214,713
Gallic leuca=$1\frac{1}{2}$ ancient Roman mile	2415,522
German raſt, or common league in France,=2 Gallic leuca	4831,044
Perſian paraſang=2 Gallic leagues	4831,044
Ægyptian ſchæne=4 ancient Roman miles	6441,392
German league, or that of Scandinavia,=2 raſts	9662,088
The mile or league of Germany=200 Rheniſh yards	8239,846
Great Arabian mile, uſed in Paleſtine in the time of the Cruſades, rated at $1\frac{1}{2}$ ancient Roman mile	2415,713
Modern Roman mile	1628,466
Modern Greek mile of 7 olympic ſtadia	1409,0545
Modern French league=2500 toiſes	5328,75
Mile of Turkey, and the common werſt of Ruſſia, ſuppoſing it 7 olympic ſtadia	1409,0545
League of Spain=4 ancient Roman miles	6441,392
Large league of Spain=5 ditto	8051,74

The

The mile employed by the Romans in Great Britain, and reſtored by Henry VII. was our preſent Engliſh mile.

The ancient Roman mile is here eſtimated at 755 French fathom, 3 feet, upon the authority of d'Anville. This differs a little from the mile uſed in the preceding table.

The preſent French Meaſures.

479. The meaſure of length is the *metre*; the meaſure of capacity is the *litre*; the meaſure of weight is the *gramme*; and the Agrarian meaſure is the *are*.

480. A *metre* is the 40 millionth part of a meridian of the earth, which, according to the laſt French meaſurement, is 39,3702 Engliſh inches; and this is the unity of length. A decimetre is $\frac{1}{10}$ of a metre; a centimetre is $\frac{1}{100}$ of a metre; a millimetre is $\frac{1}{1000}$ of a metre, &c. and a decametre is 10 metres; an hectometre is 100 metres; a kilometre is 1000 metres, &c. Thus all the multiples and ſubmultiples are taken in a tenfold proportion; and the ſame for the other meaſures.

481. A *litre* is a cube whoſe ſide is $\frac{1}{10}$ of a metre; it contains therefore 61,0242 cubic inches; and this is the unity of ſolidity. A decilitre is $\frac{1}{10}$ of a litre; a centilitre is $\frac{1}{100}$ of a litre; a millilitre is $\frac{1}{1000}$ of a litre, &c. And a decalitre is 10 litres; an hectolitre is 100 litres; a kilolitre is 1000 litres, &c.

482. A *gramme* is the weight of a cube of diſtilled water, the ſide of which is $\frac{1}{10}$ of a metre; it weighs therefore 15,45 ounces troy; and this is the unity of weight. A decigramme is $\frac{1}{10}$ of a gramme; a centigramme is $\frac{1}{100}$ of a gramme: a milligramme is $\frac{1}{1000}$ of a gramme, &c. And a decagramme is 10 grammes; an hectogramme is 100 grammes; a kilogramme is 1000 grammes, &c.

483. An *are* is the ſquare of the decametre, or 100 ſquare metres; and this is the unity. A deciare is $\frac{1}{10}$ an are; a centiare is $\frac{1}{100}$ of an are; a milliare is $\frac{1}{1000}$ of an are, &c. And a deca-are, or decare, is 10 ares; an hectare is 100 ares; a kilare is 1000 ares, &c.

On the Logline.

484. A log is a piece of board in the form of the quadrant of a circle, having its circular ſide loaded with weights to make it ſwim upright. To this log is faſtened a line of about 150 fathoms, called the log line; this is divided into equal ſpaces, called knots, each of which ought to bear the ſame proportion to a nautical mile, as $\frac{1}{2}$ a minute bears to an hour. They are called knots, becauſe at the end of each of them there is fixed a piece of twine with knots in it; and theſe are ſubdivided into tenths. Now a nautical mile $=$ 6120 feet, and the $\frac{1}{120}$ part $=$ 51 feet; now $\frac{1}{2}'$: 1 hour :: 51 feet : 6120 feet, or a mile; therefore if 51 feet of the log-line run off in $\frac{1}{2}'$, 1 mile will be run off in an hour; hence, as may knots as are run off in an hour, ſo many miles the ſhip ſails in an hour. But as the ſhip's run is found to be rather more than that given by the log, owing to the log being drawn forward, they generally allow only 50 feet for a knot; and ſome commanders allow leſs. And to meaſure the time, they have a ſand glaſs which runs out in half a minute.

485. The line runs off a reel which turns very eaſily; and the log is thrown from the poop, or lee quarter; and they generally let it run 12 or 15 fathom, ſo as to be out of the ſhip's wake, and then begin to count. There is commonly faſtened a piece of red rag, to ſhow where you are to begin to reckon. Care muſt be taken to have the hour glaſs and log line correct, otherwiſe an allowance muſt be made.

486. If the log line and the time of the running out of the glaſs be both altered in the ſame proportion, the number of knots run out in 1 glaſs will ſtill ſhow the number of miles run in an hour; for if the knots be 40 ft. and the glaſs run out in 24", then 24" : 30" :: 40 ft. : 50 ft. ſo that 50 feet is ſtill run out in half a minute.

487. In King's ſhips, India ſhips, and ſome others, the log is hove every hour; but in coaſters, and thoſe uſing ſhort voyages, every two hours.

A TABLE

A

TABLE

OF THE

LATITUDES and LONGITUDES

OF THE

PRINCIPAL PLACES ON THE EARTH's SURFACE.

A.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Abbeville	Eur.	France	50 7 4 N	1 49 43 E	0 7 19 E	
Abo	Eur.	Finland	60 27 10 N	22 13 30 E	1 28 54 E	
Achem	Afia	Sumatra	5 22 0 N	95 34 0 E	6 22 16 E	
Adventure (Bay)	Afia	New Holland	43 23 0 S	147 30 0 E	9 50 0 E	
Adventure (Ifle)	Afia	Pacific Ocean	17 5 15 S	144 17 45 W	9 37 11 W	
Agde	Eur.	France	43 18 43 N	3 27 55 E	0 13 52 E	
Agen	Eur.	France	44 12 22 N	0 36 20 E	0 2 25 E	
St. Agnes (Lights)	Eur.	Scillies	49 56 0 N	6 46 0 W	0 27 4 W	
Agra	Afia	India	26 43 0 N	76 44 0 E	5 6 56 E	
Aire	Eur.	France	43 41 52 N	4 55 51 E	0 19 43 E	
Aix	Eur.	France	43 31 48 N	5 26 32 E	0 21 46 E	
Alby	Eur.	France	43 55 36 N	2 8 18 E	0 8 33 E	
Aleppo	Afia	Turkey	35 11 25 N	37 10 0 E	2 28 40 E	
Alexandretta	Afia	Syria	36 35 27 N	36 15 0 E	2 25 0 E	
Alexandria	Africa	Egypt	31 11 28 N	30 10 22 E	2 0 41 E	
Algiers	Africa	Algiers	36 49 30 N	2 12 45 E	0 8 51 E	
Amboife	Eur.	France	47 24 54 N	0 59 7 W	0 3 56 W	
Ambrym (Ifle)	Afia	Pacific Ocean	16 9 30 S	168 12 30 E	11 12 50 E	
Amiens	Eur.	France	49 53 43 N	2 17 56 E	0 9 12 E	
Amſterdam	Eur.	Holland	52 21 56 N	4 51 30 E	0 19 26 E	3 0
Amſterdam (Ifle)	Afia	Pacific Ocean	21 9 0 S	174 46 0 W	11 39 4 W	8 30
Ancona	Eur.	Italy	43 37 54 N	13 28 52 E	0 53 56 E	
Angers	Eur.	France	47 28 9 N	0 33 15 W	0 2 13 W	
Angoulême	Eur.	France	45 38 57 N	0 9 15 E	0 0 26 E	

The

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Angra	Eur.	Tercera	38 39 0 N	27 12 15 W	1 48 49 W	
Annamocka	Aſia	Pacific Ocean	20 16 30 S	174 30 30 W	11 38 2 W	
St. Anthony's (Cape)	Amer.	Staten Land	54 46 45 S			
Antibes	Eur.	France	43 34 43 N	7 7 20 E	0 28 29 E	
Antigua (St. John's)	Amer.	Carib. Sea	17 4 30 N	62 9 0 W	4 8 36 W	
Antwerp	Eur.	Flanders	51 13 15 N	4 22 45 E	0 17 31 E	6 0
Anvers	Eur.	Netherlands	51 13 15 N	4 24 15 E	0 17 37 E	
Apæ (Iſle)	Aſia	Pacific Ocean	16 46 15 S	168 27 30 E	11 13 50 E	
Aracta	Aſia	Turkey	36 1 0 N	38 50 0 E	2 35 20 E	
Archangel	Eur.	Ruſſia	64 33 36 N	38 59 15 E	2 35 57 E	6 0
Arica	Amer.	Peru	18 26 38 S	70 25 0 W	4 41 40 W	
Arles	Eur.	France	43 40 28 N	4 37 24 E	0 18 30 E	
Arras	Eur.	France	50 17 30 N	2 46 12 E	0 11 5 E	
Aſcenſion (Iſle)	Africa	S. Atl. Ocean	7 57 0 S	13 59 0 W	0 55 56 W	
Athens	Eur.	Turkey	38 5 0 N	23 52 30 E	1 35 30 E	
Auch	Eur.	France	43 38 39 N	0 34 56 E	0 2 18 E	
St. Auguſtin	Africa	Madagaſcar	23 35 29 S	43 8 0 E	2 52 32 E	
Aurillac	Eur.	France	44 55 10 N	2 27 0 W	0 9 48 W	
Aurora (Iſle)	Aſia	Pacific Ocean	15 8 0 S	168 17 0 E	11 13 8 E	
Autun	Eur.	France	46 56 48 N	4 17 44 E	0 17 11 E	
Auxerre	Eur.	France	47 47 57 N	3 34 6 E	0 14 16 E	
Auxonne	Eur.	France	47 11 24 N	5 23 35 E	0 21 34 E	
Avignon	Eur.	France	43 56 58 N	4 48 10 E	0 19 13 E	
Avranches	Eur.	France	48 41 21 N	1 21 51 W	0 5 27 W	

B.

Babelmondel Straits	Africa	Abyſſinia	12 50 0 N	43 50 0 E	2 55 20 E	
Babylon (Ancient)	Aſia	Meſopotamia	33 0 0 N	42 46 30 E	2 51 6 E	
Bagdad	Aſia	Meſopotamia	33 19 40 N	44 24 30 E	2 57 38 E	
Balaſore	Aſia	India	21 20 0 N	86 0 0 E	5 44 0 E	
Ballabea (Iſle)	Aſia	N. Caledonia	20 7 0 S	164 22 0 E	10 57 28 E	
Banguey (Peak)	Aſia	Malacca	7 18 0 N	117 17 30 E	7 49 10 E	
Bantrey Bay	Eur.	Ireland	51 26 0 N	10 10 0 W	0 40 40 W	
Barbadoes, Bridge Town	Amer.	Atl. Ocean	13 0 0 N	59 50 0 W	3 59 20 W	
Barbas (Cape)	Africa	Sanhaga	22 15 30 N	16 40 0 W	1 6 40 W	
Barbuda (Iſle)	Amer.	Atl. Ocean	17 49 45 N	61 50 0 W	4 7 20 W	
Barcelona	Eur.	Spain	41 23 0 N	2 13 0 E	0 8 52 E	
Barnevelt's (Iſle)	Amer.	Terra del Fuego	55 49 0 S	66 58 0 W	4 27 52 W	
St. Bartholomew's (Iſle)	Aſia	N. Hebrides	15 42 0 S	167 17 30 E	11 9 10 E	
Baſil	Eur.	Switzerland	47 35 0 N	7 29 30 E	0 29 58 E	
Baſſa Terre	Amer.	Gaudaloupe	15 59 30 N	61 59 15 W	4 7 57 W	
Batavia	Aſia	Java	6 12 0 S	106 53 46 E	7 7 35 E	
Bath	Eur.	England	51 22 30 N	2 21 30 W	0 9 26 W	
Bayeux	Eur.	France	49 16 34 N	0 42 11 W	0 2 49 W	
Bayonne	Eur.	France	43 29 15 N	1 28 41 W	0 5 55 W	3 30
Beachey Head	Eur.	England	50 44 30 N	0 19 40 E	0 1 19 E	0 0

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Bear (Iſle)	Amer.	Hudſon's Bay	54 34 0 N	79 56 0 W	5 19 44 W	12 0
Beauvois	Eur.	France	49 26 0 N	2 4 42 E	0 8 19 E	
Belle Iſle	Eur.	France	47 17 17 N	3 5 0 W	0 12 20 W	2 30
Bembridge Point	Eur.	Iſle of Wight	50 40 15 N	1 4 45 W	0 4 19 W	
Bencoolen	Aſia	Sumatra	3 49 16 S	102 10 30 E	6 48 42 E	
Berlin	Eur.	Germany	52 31 30 N	13 22 0 E	0 53 28 E	
Bermudas (Iſle)	Amer.	Atl. Ocean	32 35 0 N	63 28 0 W	4 13 52 W	7 0
Beſanſon	Eur.	France	47 14 12 N	6 2 46 E	0 24 11 E	
Beſiers	Eur.	France	43 20 23 N	3 12 24 E	0 12 50 E	
Blanco (Cape)	Africa	Negroland	20 55 30 N	17 10 0 W	1 8 40 W	9 45
Blanco (Cape)	Amer.	Patagonia	47 20 0 S	64 42 0 W	4 18 48 W	
Blois	Eur.	France	47 35 20 N	1 20 10 E	0 5 20 E	
Bojador (Cape)	Africa	Negroland	26 12 30 N	14 27 0 W	0 57 48 W	0 0
Bolabola (Iſle)	Aſia	Pacif. Ocean	16 32 30 S	151 52 0 W	10 7 28 W	
Bologne	Eur.	France	50 43 33 N	1 36 33 E	0 6 26 E	10 30
Bologna	Eur.	Italy	44 29 36 N	11 21 15 E	0 45 25 E	
Bolſchereſkoi	Aſia	Siberia	52 54 30 N	156 37 30 E	10 26 30 E	
Bombay	Aſia	India	18 56 40 N	72 38 0 E	4 50 32 E	
Bonaviſta (Iſle)	Africa	Atl. Ocean	16 6 0 N	22 47 15 W	1 31 9 W	
Boſton	Amer.	New England	42 22 11 N	70 59 0 W	4 43 56 W	
Botany Bay	Aſia	New Holland	34 0 0 S	151 21 0 E	10 5 24 E	
Botany (Iſland)	Aſia	New Caledonia	22 26 40 S	167 16 45 E	11 9 7 E	
Bourbon (Iſle)	Africa	Ind. Ocean	20 51 43 S	55 30 0 E	3 42 0 E	
Bourdeaux	Eur.	France	44 50 14 N	0 34 14 W	0 2 17 W	3 0
Bourges	Eur.	France	47 4 59 N	2 23 45 E	0 9 35 E	
Breſlaw	Eur.	Sileſia	51 3 0 N	17 8 45 E	1 8 35 E	
Breſt	Eur.	France	48 22 42 N	4 29 19 W	0 17 57 W	3 45
Bridge Town	Amer.	Barbadoes	13 5 0 N	58 35 0 W	3 54 20 W	
St. Brieux	Eur.	France	48 31 21 N	2 43 17 W	0 10 53 W	
Brighton Starting-houſe	Eur.	England	50 49 48 N	0 6 28 W	0 0 26 W	
Briſtol (Cape)	Amer.	Sandwich Land	59 2 30 S	26 51 0 W	1 47 24 W	
Bruſſels	Eur.	Brabant	50 50 59 N	4 21 15 E	0 17 25 E	
Buenos Ayres	Amer.	Braſil	34 35 26 S	58 31 15 W	3 54 5 W	
Bukaroſt	Eur.	Walachia	44 26 45 N	26 8 0 E	1 44 32 E	
Buller (Cape)	Amer.	S. Georgia	53 58 30 S	37 40 0 W	2 30 40 W	
Burgeo (Iſles)	Amer.	Newfoundland	47 36 20 N	57 36 30 W	3 50 24 W	
Burlings	Eur.	Portugal	39 20 0 N	9 36 45 W	0 38 27 W	
C.						
Cabello (Port)	Amer.	Terra Firma	10 30 50 N	67 32 0 W	4 30 8 W	
Cadiz	Eur.	Spain	36 32 0 N	6 16 15 W	0 25 5 W	4 30
Caen	Eur.	France	49 11 12 N	0 21 53 W	0 1 28 W	9 0
Cahors	Eur.	France	44 26 49 N	1 26 22 E	0 5 45 E	
Cairo	Africa	Egypt	30 3 12 N	31 18 16 E	2 5 49 E	
Calais	Eur.	France	50 57 32 N	1 51 1 E	0 7 24 E	11 30
Callao	Amer.	Peru	12 1 53 S	76 58 0 W	5 7 52 W	
Calcutta (F. Will.)	Aſia	India	22 34 45 N	88 29 30 E	5 53 58 E	

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Calmar	Eur.	Sweden	56 40 30 N	16 21 45 E	1 5 27 E	
Cambray	Eur.	France	50 10 37 N	3 13 32 E	0 13 54 E	
Cambridge	Eur.	England	52 12 35 N	0 4 15 E	0 0 17 E	
Cambridge	Amer.	N. England	42 23 28 N	71 4 0 W	4 44 16 W	
Canary (Iſle) N E Point	Africa	Canaries	28 13 0 N	15 38 45 W	1 2 35 W	3 0
Candia (Iſle)	Eur.	Medit. Sea	35 18 35 N	25 18 0 E	1 41 12 E	
Candlemas Iſles	Amer.	Sandwich Lan.	57 10 0 S	27 13 0 W	1 48 52 W	
Canſo (Port)	Amer.	Nova Scotia	45 20 7 N	60 55 0 W	4 3 40 W	
Canterbury Cathedral	Eur.	England	51 18 26 N	1 4 53 E	0 4 19 E	
Canton	Aſia	China	23 8 9 N	113 2 30 E	7 33 10 E	
Cape Capricorn	Aſia	N. Holland	23 26 40 S	208 54 20 W	13 55 57 W	
Cape Clear	Eur.	Ireland	51 15 0 N	9 50 0 W	0 39 20 W	4 30
Cape Colenet	Aſia	N. Calédonia	20 30 0 S	164 56 0 E	10 59 44 E	
Cape Comerin	Aſia	India	7 56 0 N	78 5 0 E	5 22 20 E	
Cape Coronation	Aſia	N. Caledonia	22 5 0 S	167 8 0 E	11 8 32 E	
Cape Cumberland	Aſia	N. Hebrides	14 39 30 S	166 47 0 E	11 7 8 E	
Cape Florida	Am.	Florida	25 44 0 N	80 44 0 W	5 22 56 W	
Cape How	Aſia	N. Holland	57 31 57 S	210 39 3 W	14 2 36 W	
Cape Table	Aſia	New Zealand	39 6 40 S	181 57 41 W	12 7 51 W	
Carlefcroon	Eur.	Sweden	56 6 57 N	15 26 15 E	1 1 45 E	
Carthagena	Eur.	Spain	37 37 0 N	1 8 30 W	0 4 34 W	
Carthagena	Amer.	Terra Firma	10 25 19 N	75 42 54 W	5 2 52 W	
Caſan	Aſia	Siberia	55 43 58 N	49 8 15 E	3 16 33 E	
Caſſel	Eur.	Germany	51 9 20 N	9 35 3 E	0 38 20 E	
Caſtres	Eur.	France	43 36 11 N	2 14 16 E	0 8 57 E	
St. Catherine's (Iſle)	Am.	Atl. Ocean	27 35 0 S	49 17 0 W	3 17 30 W	
Cavan	Eur.	Ireland	54 51 41 N	7 23 0 W	0 29 32 W	
Cayenne	Amer.	Iſle Cayenne	4 56 15 N	52 15 0 W	3 29 0 W	
Ceylon, S. Point	Aſia	India	5 47 0 N	81 2 0 E	5 24 ′ E	
Cette	Eur.	France	43 23 51 N	3 42 7 E	0 14 48 E	
Challon	Eur.	France	46 46 54 N	4 51 27 E	0 19 24 E	
Châlons	Eur.	France	48 57 28 N	4 21 29 E	0 17 26 E	
Chandernagor	Aſia	India	22 51 26 N	88 29 15 E	5 53 27 E	
Q. Charlotte Sound	Aſia	N. Zealand	41 5 58 S	174 13 32 E	11 36 54 E	9 0
Q. Charl. Foreland	Aſia	N. Caledonia	22 15 0 S	167 12 45 E	11 8 51 E	
Q. Charlotte's Cape	Am.	Sou. Georgia	54 32 0 S	36 11 30 W	2 24 46 W	
Charlton Iſle	Am.	Hudſon's Bay	52 3 0 N	79 5 0 W	5 16 20 W	
Chartres	Eur.	France	48 26 54 N	1 29 35 E	0 5 56 E	
Cherbourg	Eur.	France	49 38 31 N	1 37 18 W	0 6 29 W	7 30
Chriſtmas Sound	Am.	Terra del Fuego	55 21 57 S	70 2 50 W	4 40 11 W	2 30
St. Chriſtopher's (Iſle)	Am.	Carib. Sea	17 15 0 N	62 43 0 W	4 10 52 W	
Churchill River	Am.	Hudſon's Bay	58 47 32 N	94 7 30 W	6 16 30 W	7 20
Civita Vecchia	Eur.	Italy	42 5 24 N	15 46 15 E	0 47 5 E	
Clerke's Iſles	Am.	Atl. Ocean	55 5 30 S	34 42 0 W	2 18 48 W	
Clermont	Eur.	France	45 46 44 N	3 5 2 E	0 12 20 E	
Cochin	Aſia	India	9 33 0 N	75 35 0 E	5 2 20 E	

The

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Colmar	Eur.	France	48 4 44 N	7 22 11 E	0 29 29 E	
Cologne	Eur.	Germany	50 55 21 N	6 55 0 E	0 27 40 E	
Compiegne	Eur.	France	49 24 59 N	2 49 41 E	0 11 19 E	
Conception	Am.	Chili	36 42 53 S	72 40 0 W	4 50 40 W	
Conſtantinople	Eur.	Turkey	41 1 27 N	28 55 0 E	1 55 40 E	
Cooper's Iſle	Am.	Atl. Ocean	54 57 0 S	36 4 20 W	2 24 17 W	
Copenhagen	Eur.	Denmark	55 41 4 N	12 35 15 E	0 50 21 E	
Coquimbo	Am.	Chili	29 52 0 S	71 19 0 W	4 45 3 W	
Cork	Eur.	Ireland	51 53 54 N	8 28 15 W	0 33 53 W	6 30
Corvo	Eur.	Azores	39 42 0 N	31 6 0 W	2 4 24 W	
Countances	Eur.	France	49 2 50 N	1 27 25 W	0 5 50 W	
Cowes Weſt, Fort	Eur.	Iſle of Wight	50 46 18 N	1 17 17 W	0 5 9 W	10 30
Cracow	Eur.	Poland	49 59 20 N	19 50 0 E	1 19 20 E	
Cremſmunſter	Eur.	Germany	48 3 29 N	14 7 0 E	0 56 28 E	
Croiſic	Eur.	France	47 17 40 N	2 31 42 W	0 10 7 W	
Cummin (Iſle)	Aſia	Pacific Ocean	31 40 0 N	121 4 0 E	8 4 16 E	
Cyprus	Aſia	Syria	34 30 0 N	33 16 0 E	2 13 4 E	

D.

Dantzic	Eur.	Poland	54 21 9 N	18 38 0 E	1 14 32 E	
Dardenels Straits	Eur.	Turkey	40 10 0 N	26 26 0 E	1 45 44 E	
Daſſen Iſland	Africa	Caffers	33 25 0 S	18 2 0 E	1 12 8 E	
Dax	Eur.	France	43 42 19 N	1 3 16 W	0 4 13 W	
Deal Caſtle	Eur.	England	51 13 5 N	1 23 59 E	0 5 36 E	
St. Dennis	Africa	I. Bourbon	20 51 43 S	55 30 0 E	3 42 0 E	
Diego (Cape)	Am.	Terra del Fuego	54 33 0 S	65 14 0 W	4 20 56 W	
Dieppe	Eur.	France	49 55 34 N	1 4 29 E	0 4 18 E	10 30
Dijon	Eur.	France	47 19 25 N	5 1 50 E	0 20 7 E	
Dillingen	Eur.	Germany	48 34 22 N	10 14 30 E	0 40 58 E	
Diſappointm. (Cape)	Am.	So. Georgia	54 58 0 S	36 15 0 W	2 25 0 W	
Diſſeada (Cape)	Am.	Terra del Fuego	55 4 15 S	74 18 0 W	4 57 12 W	
Dol	Eur.	France	48 33 8 N	1 45 18 W	0 7 2 W	
Domingo, Mole,	Aſia	Atl. Ocean	19 49 0 N	73 25 0 W	4 53 40 W	
Dominique (Iſle)	Am.	Windward Iſles	15 18 23 N	61 27 55 W	4 5 52 W	
Dorcheſter Church	Eur.	England	50 42 58 N	2 25 40 W	0 9 43 W	
Douay	Eur.	Flanders	50 22 12 N	3 4 47 E	0 12 19 E	
Dover	Eur.	England	51 7 47 N	1 18 30 E	0 5 14 E	11 30
Dreux	Eur.	France	48 44 17 N	1 21 24 E	0 5 26 E	
Dronthiem	Eur.	Norway	63 26 2 N	10 22 0 E	0 41 28 E	
Dublin	Eur.	Ireland	53 21 11 N	6 6 30 W	0 24 26 W	9 15
Dungeneſs	Eur.	England	50 52 20 N	0 59 6 E	0 3 56 E	9 45
Dunkirk	Eur.	France	51 2 11 N	2 22 23 E	0 9 30 E	0 0
Durham	Eur.	England	54 43 45 N	1 15 0 W	0 5 0 W	
Duſkey Bay	Aſia	N. Zealand	45 47 27 S	166 18 9 E	11 5 13 E	10 57
Dunnoſe	Eur.	England	50 33 30 N	1 16 20 W	0 5 5 W	9 45

The Latitudes and Longitudes of Places.

E.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Eaoowe (Iſle)	Aſia	Pacific Ocean	21 24 0 S	174 30 0 W	11 38 0 W	2 0
Eaſter Iſland	Am.	Pacific Ocean	27 6 30 S	109 46 45 W	7 19 7 W	4 30
Edinburgh	Eur.	Scotland	55 57 57 N	3 12 15 W	0 12 49 W	5 30
Edyſtone	Eur.	Eng. Channel	50 8 0 N	4 24 0 W	0 17 24 W	
Elſinore	Eur.	Denmark	56 0 0 N	13 35 0 E	0 54 20 E	
Embden	Eur.	Germany	53 5 0 N	7 26 0 E	0 29 44 E	
Embrun	Eur.	France	44 34 0 N	6 29 0 E	0 25 56 E	
Enatum (Iſle)	Aſia	Pacific Ocean	20 10 0 S	170 4 0 E	11 20 16 E	
Endeavour River	Aſia	N. Holland	15 27 11 S	214 50 0 W	14 19 20 W	
Engliſh Road	Aſia	Eaoowe	21 20 30 S	174 34 0 W	11 38 16 W	
Erramanga (Iſle)	Aſia	Pacific Ocean	18 46 30 S	169 18 30 E	11 17 14 E	
Erzerum	Aſia	Armenia	39 56 35 N	48 35 45 E	3 14 23 E	
Euſtachia (Town)	Am.	Carib. Sea	17 29 0 N	63 10 0 W	4 12 40 W	
Evout's Iſles	Am.	Terra del Fuego	55 34 30 S	66 39 0 W	4 27 56 W	
Evereux	Eur.	France	49 1 30 N	1 8 54 E	0 4 35 E	
Exeter	Eur.	England	50 44 0 N	3 34 30 W	0 14 36 W	

F.

Falmouth	Eur.	England	50 8 0 N	5 2 30 W	0 20 10 W	5 30
Falſe (Cape)	Afric.	Caffres	34 16 0 S	18 44 0 E	1 14 56 E	
Falſe Bay	Afric.	Caffres	34 10 0 S	18 33 0 E	1 14 12 E	
Farewell (Cape)	Am.	Greenland	59 38 0 N	42 42 0 W	2 50 48 W	
Farewell (Cape)	Aſia	N. Zealand	40 37 0 S	172 41 30 E	11 30 46 E	
Fayal Town	Eur.	Azores	38 32 20 N	28 41 5 W	1 54 44 W	2 20
Ferdinand Noronha	Am.	Brazil	3 56 20 S	32 38 0 W	2 10 32 W	
Ferrara	Eur.	Italy	44 49 56 N	11 36 10 E	0 46 25 E	
Ferro Iſle (Town)	Afric.	Canaries	27 47 20 N	17 45 50 W	1 11 3 W	
Finiſterre (Cape)	Eur.	Spain	42 54 0 N	9 17 10 W	0 37 9 W	
Flamborough Head	Eur.	England	54 8 0 N	0 11 0 E	0 0 44 E	
Florence	Eur.	Italy	43 46 30 N	11 3 30 E	0 44 14 E	
Flores	Eur.	Azores	39 34 0 N	31 0 0 W	2 4 0 W	
St. Flour	Eur.	France	45 1 55 N	3 5 30 E	0 12 22 E	
Fortaventure (W. Pt.)	Afric.	Canaries	28 4 0 N	14 31 30 W	0 58 6 W	
Foul Point	Afric.	Madagaſcar	17 40 14 S	49 53 0 E	3 19 32 E	
France (Iſle of)	Afric.	Indian Ocean	20 9 45 S	57 28 0 E	3 49 52 E	
Francfort (on the Ma.)	Eur.	Germany	49 55 0 N	8 35 0 E	0 34 20 E	
François (Cape)	Am.	Hiſpaniola	19 46 30 N	72 18 0 W	4 49 12 W	
Old Cape François	Am.	Hiſpaniola	19 40 30 N	70 2 0 W	4 40 8 W	
Frawenburgh	Eur.	Pruſſia	54 22 15 N	20 7 30 E	1 20 30 E	
Frejus	Eur.	France	43 25 52 N	6 43 54 E	0 26 56 E	
Frekel (Cape)	Eur.	France	48 41 3 N	6 0 0 W	0 24 0 W	
Frieſland's Peak	Am.	Sandw. Land	59 2 0 S	26 55 30 W	1 47 42 W	

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Fronſac (Strait)	Am.	Nova Scotia	45 36 57 N	61 19 30 W	4 5 18 W	
Fuego (Iſle)	Afric.	Cape Verd	14 56 45 N	24 28 0 W	1 37 52 W	
Funchal	Afric.	Madeira	32 37 40 N	17 6 15 W	1 8 25 W	12 4
Furneaux Iſland	Aſia	Pacif. Ocean	17 11 0 S	143 6 40 W	9 28 27 W	
		G.				
Gap	Eur.	France	44 33 37 N	6 4 47 E	0 24 19 E	
Gabey	Aſia	New Guinea	0 6 0 S	126 23 45 E	8 25 35 E	
Genes	Eur.	Italy	44 25 0 N	8 35 45 E	0 34 23 E	
Geneva	Eur.	Savoy	46 12 0 N	6 0 0 E	0 24 0 E	
Genoa	Eur.	Italy	44 25 0 N	8 56 37 E	0 34 23 E	
St. George (Iſle)	Eur.	Azores	38 39 0 N	28 0 0 W	1 52 0 W	
St. George (Town)	Amer.	Bermudas	32 45 0 N	63 35 0 W	4 14 20 W	
St. George (Fort)	Aſia	India	13 4 54 N	80 28 45 E	5 21 55 E	
St. George (Cape)	Aſia	New Britain	4 53 30 S	153 8 45 E	10 12 35 E	
George (Cape)	Amer.	South Georgia	54 17 0 S	36 32 30 W	2 26 10 W	
Ghent	Eur.	Flanders	51 3 0 N	3 43 45 E	0 14 55 E	
Gibraltar	Eur.	Spain	36 6 30 N	5 22 0 W	0 21 28 W	0 0
Gilbert's Iſle	Amer.	Terra del Fuego	55 13 0 S	71 6 45 W	4 44 11 W	
Glaſgow	Eur.	Scotland	55 51 32 N	4 15 0 W	0 17 0 W	
Goa	Aſia	India	15 31 0 N	73 45 0 E	4 55 0 E	
Goat Iſle	Aſia	Indian Ocean	13 55 0 N	120 2 0 E	8 0 8 E	
Gomera (Iſle)	Africa	Canaries	28 5 40 N	17 8 0 W	1 8 32 W	
Good Hope (Cape)	Africa	Caffres	34 29 0 S	18 23 15 E	1 13 33 E	3 0
Good Hope (Town)	Africa	Caffres	33 55 42 S	18 23 15 E	1 13 33 E	2 30
Goree (Iſle)	Africa	Atl. Ocean	14 40 10 N	17 25 0 W	1 9 40 W	1 30
Gottenburg	Eur.	Sweden	57 42 0 N	11 38 45 E	0 46 35 E	
Gottengen (Obſer.)	Eur.	Germany	51 31 54 N	9 53 0 E	0 39 32 E	
Granville	Eur.	France	48 50 16 N	1 36 15 W	0 6 25 W	7 0
Graſſe	Eur.	France	43 39 19 N	6 55 9 E	0 27 41 E	
Gratioſa	Eur.	Azores	39 2 0 N	27 58 0 W	1 51 52 W	
Gratz	Eur.	Germany	47 4 9 N	15 25 45 E	1 1 48 E	
Gravelines	Eur.	Flanders	50 59 4 N	2 7 32 E	0 8 30 E	0 0
Greenwich (Obſer.)	Eur.	England	51 28 40 N	0 0 0	0 0 0	
Grenoble	Eur.	France	45 11 42 N	5 43 34 E	0 22 54 E	
Gryphiſwald	Eur.	Germany	54 4 25 N	13 38 30 E	0 54 34 E	
Guadaloupe	Amer.	Carib. Sea	15 59 30 N	61 48 15 W	4 7 13 W	
Guiaquil	Amer.	Peru	2 11 21 S	81 11 30 W	5 24 46 W	
Gurief	Aſia	Siberia	47 7 7 N	51 56 0 E	3 27 44 E	
Guernſey	Eur.	Brit. Channel	49 30 0 N	2 47 0 W	0 11 8 W	

The Latitudes and Longitudes of Places.

H.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Hague	Eur.	Netherlands	52 4 10 N	4 17 30 E	0 17 10 E	8 15
Hamburg	Eur.	Netherlands	53 33 3 N	10 1 11 E	0 39 20 E	6 0
Hang-lip (Cape)	Africa	Caffres	34 16 0 S	18 24 0 E	1 14 56 E	
Hanover	Eur.	Germany	52 22 18 N	9 48 15 E	0 38 57 E	
Harborough (Mark.)	Eur.	England	52 28 30 N	0 57 25 W	0 3 50 W	
Harlem	Eur.	Netherlands	52 22 14 N	4 37 0 E	0 18 28 E	
Hastings	Eur.	England	50 52 10 N	0 41 10 E	0 2 45 W	
Havannah	Am.	Cuba	23 11 52 N	82 18 30 W	5 29 14 W	
Havre-de-grace	Eur.	France	49 29 14 N	0 6 23 E	0 0 26 E	9 0
Heete (La)	Eur.	Netherlands	51 23 2 N	4 45 30 E	0 19 2 E	
St. Helena (Ja. Town)	Africa	S. Atl. Ocean	15 55 0 S	5 49 0 W	0 23 16 W	
Henlopen (Cape)	Amer.	Virginia	38 46 0 N	75 12 30 W	5 0 50 W	
Hernosand	Eur.	Sweden	62 38 0 N	17 53 0 E	1 11 32 E	
Hervey's Isle	Asia	Pacific Ocean	19 17 0 S	158 48 0 W	10 35 12 W	
Hinchinbroke Isle	Asia	Pacific Ocean	17 25 0 S	168 38 0 E	11 14 32 E	
Hoai-Ngam	Asia	China	33 34 40 N	118 49 30 E	7 55 18 E	
Hogue (Cape La)	Eur.	France	49 44 40 N	1 56 50 W	0 7 47 W	
Holyhead	Eur.	Wales	53 23 0 N	4 40 0 W	0 18 40 W	
Hood's Isle	Asia	Pacific Ocean	9 26 0 S	138 52 0 W	9 15 28 W	
Hoogstraeten	Eur.	Netherlands	51 24 44 N	4 47 0 E	0 19 8 E	
Horn (Cape)	Am.	Terra del Fuego	55 58 0 S	68 13 0 W	4 29 44 W	
Hout Bay	Africa	Caffres	34 3 0 S	18 19 0 E	1 13 16 E	
Howe's Isle	Asia	Pacific Ocean	16 46 30 S	154 6 40 W	10 16 27 W	
Huahine (Isle)	Asia	Pacific Ocean	16 44 0 S	151 6 0 W	10 4 24 W	
Hull	Eur.	England	53 50 0 N	0 28 0 W	0 1 52 W	
Hurst Castle	Eur.	England	50 42 23 N	1 32 45 W	0 6 11 W	

I. J.

Jaffa	Asia	Syria	32 5 0 N	35 10 0 E	2 20 40 E	
Jamaica (Port-royal)	Am.	Atl. Ocean	18 0 0 N	76 44 30 W	5 6 58 W	
Jakutskoi	Asia	Siberia	62 1 30 N	129 47 45 E	8 39 11 E	
Janeiro (Rio)	Am.	Brazil	22 54 30 S	42 43 45 W	2 50 55 W	
Jassy	Eur.	Moldavia	47 8 30 N	27 29 45 E	1 49 59 E	
Java Head	Asia	Java	6 49 0 S	106 50 0 E	7 7 20 E	
Jerusalem	Asia	Palestine	31 46 34 N	35 20 0 E	2 21 20 E	
St. Ildefonso's Isles	Am.	Terra del Fuego	55 51 0 S	69 21 0 W	4 37 52 W	
Immer (Isle)	Asia	Pacific Ocean	19 16 0 S	169 46 0 E	11 19 4 E	
Ingolstadt	Eur.	Germany	48 45 45 N	11 22 30 E	0 45 30 E	
St. John's	Am.	Antigua	17 4 30 N	62 9 0 W	4 8 36 W	
St. John's	Am.	Newfoundland	47 32 0 N	52 26 0 W	3 29 44 W	6 0
Joppa	Asia	Syria	32 45 0 N	36 0 0 W	2 24 0 W	
St. Joseph's	Am.	California	23 3 42 S	109 42 30 W	7 18 50 W	
Irraname (Isle)	Asia	Pacific Ocean	19 31 0 S	170 21 0 E	11 21 24 E	

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Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Iſlamabad	Aſia	India	22 20 0 N	91 45 0 E	6 7 0 E	
Iſle of Pines	Aſia	Pacific Ocean	22 38 0 S	167 28 0 E	11 10 32 E	
Iſpahan	Aſia	Perſia	32 25 0 N	52 50 0 E	3 31 20 E	
St. Juan (Cape)	Am.	Staten Land	54 47 10 S	63 47 0 W	4 15 8 W	
Judda	Aſia	Arabia	21 29 0 N	39 22 0 E	2 37 28 E	
St. Juliana (Port)	Am.	Patagonia	49 10 0 S	68 44 0 W	4 34 56 W	4 45
Juthia	Aſia	India	14 18 0 N	100 50 0 E	6 43 20 E	
K.						
Kedgeree	Aſia	India	21 48 0 N	88 50 15 E	5 55 21 E	
Kiow	Eur.	Ukraine	50 27 0 N	30 27 30 E	2 1 50 E	
Kola	Eur.	Lapland	68 52 30 N	33 0 30 E	2 12 2 E	
L.						
Ladrone (Grand)	Aſia	Pacific Ocean	22 2 0 N	113 56 0 E	7 35 44 E	
Laguna	Africa	Teneriffe	28 28 57 N	16 18 15 W	1 5 13 W	
Lancarota (E. Pt.)	Africa	Canaries	29 14 0 N	13 26 0 W	0 53 44 W	
Landau	Eur.	France	49 11 38 N	8 7 30 E	0 32 30 E	
Landſcroon	Eur.	Sweden	55 52 31 N	12 50 46 E	0 51 23 E	
Lands-End	Eur.	England	50 4 7 N	5 41 31 W	0 22 4 W	
Langres	Eur.	France	47 52 17 N	5 19 23 E	0 21 18 E	
Lauſanne	Eur.	Switzerland	46 31 5 N	6 45 15 E	0 27 1 E	
Lectoure	Eur.	France	43 56 2 N	0 36 53 E	0 2 28 E	
Leeds	Eur.	England	53 48 0 N	1 34 15 W	0 6 17 W	
Leghorn	Eur.	Italy	43 33 0 N	10 25 0 E	0 41 40 E	
Leiceſter	Eur.	England	52 38 0 N	1 8 30 W	0 4 34 W	
Leipſic	Eur.	Saxony	51 19 14 N	12 20 0 E	0 49 20 E	
Leper's Iſland	Aſia	Pacific Ocean	15 23 30 S	167 58 15 E	11 11 53 E	
Leſkeard	Eur.	England	50 26 55 N	4 41 45 W	0 18 47 W	
Leſparre	Eur.	France	45 18 33 N	0 57 3 W	0 3 48 W	
Leyden	Eur.	Holland	52 8 40 N	4 28 0 E	0 17 52 E	
Liege	Eur.	Netherlands	50 37 30 N	5 35 0 E	0 22 20 E	
Lima	Am.	Peru	12 1 15 S	76 49 30 W	5 7 18 W	
Limoges	Eur.	France	45 49 44 N	1 15 50 E	0 5 4 E	
Lintz	Eur.	Germany	48 16 0 N	13 57 30 E	0 55 50 E	
Liſieux	Eur.	France	49 8 50 N	0 13 32 E	0 0 54 E	
Liſle	Eur.	Flanders	50 37 50 N	3 4 16 E	0 12 17 E	
Liſbon	Eur.	Portugal	38 42 25 N	9 4 40 W	0 36 40 W	2 15
Lion's Bank	Eur.	Atl. Ocean	56 40 0 N	17 45 0 W	1 11 0 W	
Liſburne (Cape)	Aſia	N. Hebrides	15 40 45 S	166 57 0 E	11 7 48 E	
Liverpool	Eur.	England	53 22 0 N	3 10 0 W	0 12 40 W	
Lizard Flagſtaff	Eur.	England	49 57 56 N	5 11 18 W	0 20 45 W	7 30
Lombes	Eur.	France	43 28 30 N	0 55 9 E	0 3 41 E	
London (St. Paul's)	Eur.	England	51 31 0 N	0 5 37 W	0 0 22½ W	3 0

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Names of Places.	Cont.	Sea or Country.	Latitudes.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Lorenzo (Cape)	Am.	Peru	1 2 0 S	80 17 0 W	5 21 8 W	
St. Louis (Port)	Am.	Hiſpaniola	18 18 50 N	73 16 0 W	4 53 4 W	
St. Louis (Port)	Africa	Mauritius	20 9 45 S	57 28 0 E	3 49 52 E	
Louiſbourg	Am.	Cape Breton	45 53 40 N	59 55 0 W	3 59 40 W	
Louveau	Aſia	India	12 42 30 N	101 1 30 E	6 44 6 E	
Louvain	Eur.	Netherlands	50 53 3 N	4 44 15 E	0 18 57 E	
Lowestoffe	Eur.	England	52 29 0 N	1 44 9 E	0 6 57 E	
St. Lucia (Iſle)	Am.	Antilles	13 24 30 N	60 51 30 W	4 3 26 W	
Lunden	Eur.	Sweden	55 42 26 N	13 12 27 E	0 52 50 E	
Luneville	Eur.	France	48 35 33 N	6 30 6 E	0 26 0 E	
Luſon	Eur.	France	46 27 15 N	1 10 34 W	0 4 42 W	
Luxembourg	Eur.	Netherlands	49 37 6 N	6 11 45 E	0 24 47 E	
Lyme Steeple	Eur.	England	51 4 20 N	1 1 22 E	0 4 5 E	
Lynn	Eur.	England	52 45 16 N	0 23 45 E	0 1 35 E	
Lyons	Eur.	France	45 45 52 N	4 49 9 E	0 19 17 E	
		M.				
Macao	Aſia	China	22 12 44 N	113 46 15 E	7 35 5 E	
Macaſſar	Aſia	Celebes	5 9 0 S	119 48 45 E	7 59 15 E	
Madeira (Funchal)	Africa	Atl. Ocean	32 37 40 N	16 56 0 W	1 7 44 W	12 4
Madraſs	Aſia	India	13 4 54 N	80 28 45 E	5 21 55 E	
Madre de Dios (Port)	Aſia	Marqueſas	9 55 30 S	139 8 40 W	9 16 35 W	2 30
Madrid	Eur.	Spain	40 25 18 N	3 12 0 W	0 14 8 W	
Magdalena (Iſle)	Aſia	Pacific Ocean	10 25 30 S	138 49 0 W	9 15 16 W	
Mahon (Port)	Eur.	Minorca	39 50 46 N	3 48 30 E	0 15 14 E	
Majorca (Iſle)	Eur.	Mediterr. Sea	39 35 0 N	2 29 45 E	0 9 59 E	
Malacca	Aſia	India	2 12 0 N	102 5 0 E	6 48 20 E	
Malines	Eur.	Netherlands	51 1 50 N	4 28 45 E	0 17 55 E	
Mallicola (Iſle)	Aſia	Pacific Ocean	16 15 30 S	167 39 15 E	11 10 37 E	
St. Maloes	Eur.	France	48 38 59 N	2 2 22 W	0 8 9 W	6 0
Malta (Iſle)	Africa	Mediterr. Sea	35 53 47 N	14 28 30 E	0 57 54 E	
Manilla	Aſia	Philippines	14 36 8 N	120 52 0 E	8 3 28 E	
St. Margaret's Steeple	Eur.	England	51 9 14 N	1 22 7 E	0 5 28 E	
Marigalante (Iſle)	Am.	Atl. Ocean	15 55 15 N	61 11 0 W	4 4 44 W	
Marſeilles	Eur.	France	43 17 43 N	5 21 43 E	0 21 27 E	
St. Martha	Am.	Terra Firma	11 26 40 N	74 4 30 W	4 56 18 W	
St. Martin's (Iſle)	Am.	Carib. Sea	18 4 20 N	63 2 0 W	4 12 8 W	
Martinico (Port royal)	Am.	Atl. Ocean	14 35 55 N	61 9 0 W	4 4 36 W	
St. Mary's (Iſle)	Eur.	Scilly Iſles	49 57 30 N	6 43 0 W	0 26 52 W	3 45
St. Mary's (Town)	Eur.	Azores	36 56 40 N	25 9 15 W	1 40 37 W	
Maſkelyne's Iſle	Aſia	Pacific Ocean	16 32 0 S	167 59 15 E	11 11 57 E	
St. Matthew (Lights)	Eur.	France	48 19 52 N	4 47 25 W	0 19 10 W	
Mauritius	Africa	Indian Ocean	20 9 45 S	57 29 15 E	3 49 57 E	
Maurua (Iſle)	Aſia	Pacific Ocean	16 25 40 S	152 32 40 W	10 10 11 W	
Mayence	Eur.	Germany	49 54 0 N	8 20 0 E	0 33 20 E	

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Mayne (John's) Iſle	Eur.	North Ocean	71 10 0 N	9 49 30 W	0 39 18 W	
Mayo (Iſle)	Africa	Cape Verd	15 10 0 N	23 5 0 W	1 32 20 W	
Meaux	Eur.	France	48 57 40 N	2 52 30 E	0 11 30 E	
Mecca	Aſia	Arabia	21 40 0 N	41 0 0 E	2 44 0 E	
Mende	Eur.	France	44 31 2 N	3 29 35 E	0 13 58 E	
Mergui	Aſia	Siam	12 12 0 N	98 8 45 E	6 32 35 E	
Metz	Eur.	France	49 7 10 N	6 10 13 E	0 24 41 E	
Mew Stone	Aſia	New Holland	43 48 0 S	146 27 0 E	9 45 48 E	
Mexico	Am.	Mexico	19 25 50 S	100 5 45 W	6 40 23 W	
Méziéres	Eur.	France	49 45 47 N	4 43 16 E	0 18 53 E	
Miatea (Iſle)	Aſia	Pacific Ocean	17 52 0 S	148 6 0 W	9 52 24 W	
St. Michael's (Iſle)	Eur.	Azores	37 47 0 N	25 42 0 W	1 42 48 W	
Middleburg (Iſle)	Aſia	Pacific Ocean	21 20 30 S	174 34 0 W	11 38 16 W	
Milan	Eur.	Italy	45 27 57 N	9 11 45 E	0 36 47 E	
Milo (Iſle)	Eur.	Mediterr. Sea	36 41 0 N	25 0 0 E	1 40 0 E	
Minorca (fort, St. Philip)	Eur.	Mediterr. Sea	39 51 0 N	3 54 0 E	0 15 36 E	
Modena	Eur.	Italy	44 34 0 N	11 12 30 E	0 44 50 E	
Mons	Eur.	Netherlands	50 27 10 N	3 57 15 E	0 15 49 E	
Montagu (Cape)	Am.	Sandwich Land	58 33 0 S	26 46 0 W	1 47 4 W	
Montagu (Iſle)	Aſia	Pacific Ocean	17 26 0 S	168 31 30 E	11 14 6 E	
Montmirail	Eur.	France	48 52 8 N	3 32 16 E	0 14 9 E	
Montpellier	Eur.	France	43 36 29 N	3 52 25 E	0 15 30 E	
Montreal	Am.	Canada	45 50 0 N	73 11 0 W	4 52 44 W	
Montſerrat (Iſle)	Am.	Carib. Sea	16 47 30 N	62 17 0 W	4 9 8 W	
Monument (The)	Aſia	Pacific Ocean	17 14 15 S	168 38 15 E	11 14 33 E	
Moſcow	Eur.	Moſcovy	55 45 45 N	37 32 45 E	2 30 11 E	
Moulins	Eur.	France	46 34 4 N	3 19 59 E	0 13 20 E	
Munich	Eur.	Bavaria	48 9 55 N	11 30 0 E	0 46 0 E	
Muſketto Cove	Am.	Greenland	64 55 13 N	52 56 45 W	3 31 47 W	10 15
Muſwell Hill	Eur.	England	51 35 32 N	0 7 20 W	0 0 29 W	
		N.				
Namur	Eur.	Netherlands	50 28 32 N	4 44 45 E	0 18 59 E	
Nancy	Eur.	France	48 41 55 N	6 10 16 E	0 24 41 E	
Nangaſachi	Aſia	Japan	32 32 0 N	128 46 15 E	8 35 5 E	
Nankin	Aſia	China	32 4 40 S	118 47 0 E	7 55 8 E	
Nantes	Eur.	France	47 13 6 N	1 32 59 W	0 6 12 W	3 0
Naples	Eur.	Italy	40 50 15 N	14 17 30 E	0 57 10 E	
Narbonne	Eur.	France	43 10 58 N	2 59 59 E	0 12 0 E	
Nevers	Eur.	France	46 59 17 N	3 9 16 E	0 12 37 E	
New Year's Harbour	Am.	Staten Land	54 48 55 S	64 11 0 W	4 16 44 W	
Niagara	Am.	Canada	43 4 25 N	79 7 51 W	5 16 31 W	
Nice	Eur.	France	43 41 47 N	7 16 22 E	0 29 5 E	
St. Nicholas Mole	Am.	Hiſpaniola	19 49 20 N	73 29 45 W	4 53 59 W	
Nieuport	Eur.	Flanders	51 9 41 N	2 45 0 E	0 11 0 E	12 0
Ningpo	Aſia	China	29 57 45 N	120 18 0 E	8 1 12 E	
Niſmes	Eur.	France	43 50 12 N	4 18 39 E	0 17 15 E	

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Noir (Cape)	Amer.	Terra del Fuego	54 32 30 S	73 3 15 W	4 48 13 W	
Nootka	Amer.	Pacific Ocean	49 36 6 N	126 42 30 W	8 26 50 W	
Norfolk iſland	Aſia	Pacific Ocean	29 1 45 N	168 10 0 E	11 12 40 E	
Noriton	Amer.	Penſylvania	40 9 56 N	75 23 30 W	5 1 34 W	
North Cape	Eur.	Lapland	71 10 0 N	25 57 0 E	1 43 48 E	3 0
Cape North	Amer.	South Georgia	54 4 45 N	38 15 0 W	2 33 0 W	
Noyon	Eur.	France	49 34 59 N	3 59 48 E	0 11 59 E	
Nuremberg	Eur	Germany	49 26 55 N	11 4 0 E	0 44 16 E	
O.						
Oaitipeha Bay	Aſia	Otaheite	17 29 17 S	149 35 45 W	9 56 57 W	
Ochoz	Aſia	Tartary	59 20 10 N	143 12 30 E	9 32 50 E	
Ohamaneno Harbour	Aſia	Uliateah	16 45 30 S	151 38 5 W	10 6 32 W	11 20
Ohevahoa (Iſle)	Aſia	Pacific Ocean	9 40 40 S	139 1 40 W	9 16 7 W	
Ohitahoo (Iſle)	Aſia	Pacific Ocean	9 55 30 S	139 6 0 W	9 16 24 W	2 30
Oleron (Iſle)	Eur.	France	46 2 50 N	1 25 13 W	0 5 41 W	
Olinde	Amer.	Brazil	8 13 0 S	35 5 30 W	2 20 22 W	
St. Omer's	Eur.	Flanders	50 44 46 N	2 14 57 E	0 9 0 E	
Onateayo (Iſle)	Aſia	Pacific Ocean	9 58 0 S	138 51 0 W	9 15 24 W	
Oporto	Eur.	Portugal	41 10 0 N	8 22 0 W	0 33 8 W	
Orenburg	Aſia	Tartary	51 46 5 N	55 4 30 E	3 40 18 E	
Orleans	Eur.	France	47 54 10 N	1 54 27 E	0 7 38 E	
Orleans (New)	Am.	Louiſiana	29 57 45 N	89 58 45 W	5 59 55 W	
Oratava	Africa	Teneriffe	28 23 27 N	16 24 11 W	1 5 37 W	
Orſk	Aſia	Tartary	51 12 30 N	58 30 45 E	3 54 3 E	
Ortagal (Cape)	Eur.	Spain	43 46 30 N	7 39 0 W	0 30 36 W	
Oſnaburg (Iſle)	Aſia	Pacific Ocean	17 49 30 S	149 26 15 W	9 52 24 W	
Oſtend	Eur.	Netherlands	51 13 55 N	2 55 45 E	0 11 43 E	12 0
Owharre Bay	Aſia	Huahine	16 44 0 S	151 8 15 W	10 4 33 W	
Oxford (Obſervatory)	Eur.	England	51 45 38 N	1 15 30 W	0 5 2 W	
P.						
Padua	Eur.	Italy	45 23 40 N	11 52 30 E	0 47 30 E	
Paita	Am.	Peru	5 12 0 S			
Palliſer's (Iſles)	Aſia	Pacific Ocean	15 38 15 S	146 30 15 W	9 46 1 W	
Palliſer (Cape)	Aſia	New Zealand	41 38 0 S	175 18 0 E	11 44 30 E	
Palma (Iſle)	Africa	Canaries	28 36 45 N	17 50 0 W	1 11 20 W	
Palmerſton's (Iſle)	Aſia	Pacific Ocean	18 0 0 S	162 57 0 W	10 51 48 W	
Panama	Am.	Mexico	8 47 48 N	80 21 0 W	5 21 24 W	
Paoom (Iſle)	Aſia	Pacific Ocean	16 30 0 S	168 28 45 E	11 13 55 E	
Paris (Obſerv.)	Eur.	France	48 50 14 N	2 20 0 E	0 9 20 E	
Patrixfiord	Eur.	Iceland	65 35 45 N	24 10 0 W	1 36 40 W	
Pau	Eur.	France	43 15 0 N	0 9 0 W	0 0 36 W	
St. Paul's (Iſle)	Africa	Indian Ocean	37 51 0 S	77 48 0 E	5 11 12 E	
St. Paul de Léon	Eur.	France	48 40 55 N	4 0 21 W	0 16 1 W	4 0

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Pekin	Aſia	China	39 54 13 N	116 27 30 E	7 45 50 E	
Perigueux	Eur.	France	45 11 8 N	0 43 9 E	0 2 53 E	
Perinaldi	Eur.	Italy	43 53 20 N	7 40 0 E	0 30 40 E	
Perpignan	Eur.	France	42 41 53 N	2 53 35 E	0 11 34 E	
St. Peter's Fort	Am.	Martinico	14 44 0 N	61 21 16 W	4 5 25 W	
St. Peter's (Iſle)	Am.	Atl. Ocean	46 46 30 N	56 17 0 W	3 45 8 W	
Peterſburg	Eur.	Ruſſia	59 56 23 N	30 19 0 E	2 1 16 E	
Petit Goave	Am.	Hiſpaniola	18 27 0 N	72 52 30 W	4 51 30 W	
Petropawloſkoi	Aſia	Kamchatka	53 1 20 N	158 48 0 E	10 35 13 E	
Philadelphia	Amer.	Penſylvania	39 56 55 N	75 13 30 W	5 0 54 W	
St. Philip's Fort	Eur.	Minorca	39 50 46 N	3 48 30 E	0 15 14 E	
Pickerſgill's (Iſle)	Amer.	Atl. Ocean	54 42 30 S	36 58 0 W	2 27 52 W	
Pickerſgill's Harbour	Aſia	N. Zealand	45 47 27 S	166 18 9 E	11 5 13 E	
Pico	Eur.	Azores	38 28 40 N	28 26 0 W	1 53 44 W	
Pines (Iſle)	Aſia	N. Caledonia	22 38 0 S	167 38 0 E	11 10 32 E	
Piſa	Eur.	Italy	43 43 7 N	10 23 0 E	0 41 32 E	
Plymouth Garriſon	Eur.	England	50 21 22 N	4 7 24 W	0 16 30 W	6 0
Poitiers	Eur.	France	46 34 50 N	0 20 48 E	0 1 23 E	
Pollingen	Eur.	Germany	47 48 17 N	11 7 17 E	0 44 29 E	
Poole Church	Eur.	England	50 42 50 N	1 58 55 W	0 7 56 W	
Pondicherry	Aſia	India	11 41 55 N	79 52 45 E	5 19 31 E	
Ponoi	Eur.	Lapland	67 4 30 N	36 23 15 E	2 25 33 E	
Pontoiſe	Eur.	France	49 3 2 N	2 5 37 E	0 8 22 E	
Portland Light-houſe	Eur.	England	50 31 22 N	2 26 49 W	0 9 47 W	
Porto Bello	Amer.	Mexico	9 33 5 N	79 50 20 W	5 19 21 W	
Porto Sancto (Iſle)	Africa	Madeira	32 58 15 N	16 25 15 W	1 5 41 W	
Port Royal	Am.	Jamaica	18 0 0 N	76 45 30 W	5 7 2 W	
Port Royal	Am.	Martinico	14 35 55 N	61 9 0 W	4 4 36 W	
Portſmouth Church	Eur.	England	50 47 27 N	1 5 57 W	0 4 24 W	11 15
Portſmouth Academy	Eur.	England	50 48 2 N	1 6 1 W	0 4 24 W	
Portland (Iſle)	Eur.	North Sea	63 22 0 N	18 54 0 W	1 15 36 W	
Portland (Iſle)	Aſia	Pacific Ocean	39 25 0 S	178 12 0 E	11 52 48 E	
Port Paix	Am.	Hiſpaniola	19 58 0 N	73 2 0 W	4 48 8 W	
Port Praya	Africa	St. Jago	14 53 53 N	23 29 22 W	1 33 57 W	11 0
Prague	Eur.	Bohemia	50 5 47 N	14 24 0 E	0 57 36 E	
Prin. of Wales's Fort	Am.	New Wales	58 47 32 N	94 7 30 W	6 16 30 W	
Providence	Am.	N. England	41 50 40 N	71 26 0 W	4 45 44 W	
Pudyoua	Aſia	N. Caledonia	20 18 0 S	164 41 14 E	10 58 45 E	6 30
Pulo Condor (Iſle)	Aſia	Indian Ocean	8 40 0 N	107 20 0 E	7 9 20 E	
Pulo Timon (Iſle)	Aſia	Gulph Siam	3 0 0 N	104 25 0 E	6 57 40 E	
Pyleſtaart's (Iſle)	Aſia	Pacific Ocean	22 23 0 S	175 41 30 W	11 42 46 W	

The Latitudes and Longitudes of Places.

Q.

Names of Places.	Cont.	Sea or Country.	Latitudes.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Quebec	Am.	Canada	46 47 30 N	71 10 0 W	4 44 40 W	7 30
Quimper	Eur.	France	47 58 29 N	4 6 0 W	0 16 24 W	
St. Quinton	Eur.	France	49 50 51 N	3 17 23 E	0 13 10 E	
Quiros (Cape)	Afia	N. Hebrides	14 56 8 S	167 20 0 E	11 9 20 E	
Quito	Am.	Peru	0 13 17 S	77 55 0 W	5 11 40 W	

R.

Rakah (Ancient)	Afia	Mefopotamia	36 1 0 N	38 50 0 E	2 35 20 E	
Ramhead	Eur.	England	50 18 40 N	4 20 15 W	0 17 21 W	
Ramfgate Windmill	Eur.	England	51 19 49 N	1 24 4 E	0 5 36 E	
Re (Iſle)	Eur.	France	46 14 48 N	1 34 28 W	0 6 18 W	3 0
Recif	Am.	Brafil	8 10 0 S	35 35 0 W	2 22 20 W	
Reikianeſs (Cape)	Eur.	Iceland	63 55 0 N	22 47 30 W	1 31 10 W	
Rennes	Eur.	France	48 6 45 N	1 41 53 W	0 6 48 W	
Reſolution (Bay)	Afia	Ohitahoo	9 55 30 S	139 8 40 W	9 16 35 W	2 30
Reſolution (Iſle)	Afia	Pacific Ocean	17 23 30 S	141 45 0 W	9 27 0 W	
Reſolution (Port)	Afia	Tanna	19 32 25 S	169 41 5 E	11 18 44 E	
Rheims	Eur.	France	49 15 16 N	4 1 48 E	0 16 7 E	
Rhodes	Eur.	France	44 20 59 N	2 34 17 E	0 10 17 E	
Rhodes	Afia	Archipelago	35 27 0 N	28 45 0 E	1 55 0 E	
Rimini	Eur.	Italy	44 3 43 N	12 34 15 E	0 50 17 E	
Rio Janeiro	Am.	Brafil	22 54 10 S	42 43 45 W	2 50 55 W	
Rochelle	Eur.	France	46 9 21 N	1 9 55 W	0 4 40 W	3 45
Rochford	Eur.	France	45 50 10 N	0 57 49 W	0 3 51 W	4 15
Rock of Liſbon	Eur.	Portugal	38 45 30 N	9 35 30 W	0 38 22 W	
Rodrigues (Iſle)	Africa	Indian Ocean	19 40 40 S	63 10 0 E	4 12 40 E	
Rome (St. Peter's)	Eur.	Italy	41 53 54 N	12 29 15 E	0 49 57 E	
Rotterdam	Eur.	Holland	51 55 58 N	4 29 0 E	0 17 56 E	3 0
Rotterdam (Iſle)	Afia	Pacific Ocean	20 16 30 S	174 30 30 W	11 38 2 W	
Rouen	Eur.	France	49 26 27 N	1 1 32 W	0 4 6 W	1 15

S

Saba (Iſle)	Am.	Carib. Sea	17 39 30 N	63 17 15 W	4 13 9 W	
Sable (Cape)	Am.	Nova Scotia	43 23 45 N	65 39 15 W	4 22 37 W	
Sagan	Eur.	Sileſia	51 42 12 N	15 22 15 E	1 1 29 E	
Saintes	Eur.	France	45 44 43 N	0 38 54 W	0 2 36 W	
Sainte-Croix	Eur.	France	48 0 35 N	7 23 55 E	0 29 36 E	
Saliſbury Spire	Eur.	England	51 3 49 N	1 47 0 W	0 7 8 W	
Sall (Iſle)	Africa	Atl. Ocean	16 38 15 N	22 56 15 W	1 31 45 W	
Salonique	Eur.	Turkey	40 41 10 N	23 8 0 E	1 32 32 E	
Salvages (Iſles)	Africa	Atl. Ocean	30 0 0 N	15 54 0 W	1 3 36 W	

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Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Samana	Amer.	Hiſpaniola	19 15 0 N	69 16 30 W	4 37 6 W	
Samos	Aſia	Archipelago	37 46 0 N	27 13 0 E	1 48 52 E	
Sancta Cruz	Africa	Teneriffe	28 27 30 N	16 16 15 W	1 5 5 W	
Sandwich (Bay)	Amer.	South Georgia	54 42 0 S	36 12 0 W	2 24 48 W	
Sandwich (Cape)	Aſia	Mallicola	16 28 0 S	167 59 0 E	11 11 56 E	
Sandwich Harbour	Aſia	Mallicola	16 25 20 S	167 53 0 E	11 11 32 E	
Sandwich (Iſle)	Aſia	Pacific Ocean	17 41 0 S	168 33 0 E	11 14 12 E	
Saunders's (Cape)	Amer.	Sandw. Land	54 6 30 S	36 57 30 W	2 27 50 W	
Saunders's (Iſle)	Amer.	South Georgia	58 0 0 S	26 58 0 W	1 47 52 W	
Savage (Iſle)	Aſia	Pacific Ocean	19 2 15 S	169 30 30 W	11 18 2 W	
Scarborough Head	Eur.	England	54 18 0 N	0 13 0 W	0 0 52 W	
Schwezingen	Eur.	Germany	49 23 4 N	8 40 45 E	0 34 23 E	
Scilly Iſles (Lights)	Eur.	Eng. Channel	49 56 0 N	6 46 0 W	0 27 4 W	
Sebaſtian St. (Cape)	Africa	Madagaſcar	12 30 0 S	46 25 0 E	3 5 40 E	
Sedan	Eur.	France	49 42 29 N	4 57 36 E	0 19 50 E	
Seez	Eur.	France	48 36 23 N	0 10 44 E	0 0 43 E	
Senegal	Africa	Negroland	15 53 0 N	16 31 30 W	1 6 6 W	10 30
Senlis	Eur.	France	49 12 28 N	2 34 58 E	0 10 20 E	
Sens	Eur.	France	48 11 55 N	3 17 21 E	0 13 6 E	
Senones	Eur.	France	48 23 7 N	6 57 0 E	0 27 48 E	
Sheerneſs	Eur.	England	51 25 0 N	0 50 0 E	0 3 20 E	
Shepherd's (Iſles)	Aſia	Pacif. Ocean	16 58 0 S	168 42 0 E	11 14 48 E	
Shirburn Caſtle	Eur.	England	51 39 25 N	1 0 0 W	0 4 0 W	
Siam	Aſia	India	14 20 40 N	100 50 0 E	6 43 20 E	
Si-ngham-fu	Aſia	China	34 16 30 N	108 43 45 E	7 14 55 E	
Siſteron	Eur.	France	44 11 51 N	5 56 18 E	0 23 45 E	
Sligo Bay	Eur.	Ireland	54 15 0 N	9 18 0 W	0 37 12 W	
Smyrna	Aſia	Natolia	38 28 7 N	27 6 35 E	1 48 26 E	
Snæfell (Mount)	Eur.	Iceland	64 52 20 N	23 54 0 W	1 35 36 W	
Soiſſons	Eur.	France	49 22 52 N	3 19 16 E	0 13 17 E	
Sombavera (Iſles)	Am.	Carib. Sea	18 38 0 N	63 37 30 W	4 14 30 W	
Soolo	Aſia	India	5 57 0 N	121 15 30 E	8 5 2 E	
Southampton Spire	Eur.	England	50 93 59 N	1 23 56 W	0 5 36 W	
Southern Thule	Am.	Sandw. Land	59 34 0 S	27 45 0 W	1 51 0 W	
Speaker Bank	Aſia	Indian Ocean	4 45 0 S	72 57 0 E	4 51 48 E	
Stalbridge	Eur.	England	50 57 0 N	2 23 30 W	0 9 34 W	
Start-Point	Eur.	England	50 13 26 N	3 38 21 W	0 14 33 W	
Stockholm	Eur.	Sweden	59 20 31 N	18 3 55 E	1 12 16 E	
Stonehenge	Eur.	England	51 10 44 N	1 49 8 W	0 7 16 W	
Straumneſs	Eur.	Iceland	65 39 40 N	24 29 15 W	1 37 57 W	
Stratſbourgh	Eur.	France	48 34 56 N	7 44 36 E	0 30 58 E	
Succeſs Bay	Am.	Terra del Fuego	54 49 45 S	65 25 0 W	4 21 40 W	
Succeſs Cape	Am.	Terra del Fuego	55 1 0 S	65 27 0 W	4 21 48 W	
Suez	Africa	Egypt	29 50 0 N	33 27 0 E	2 13 48 E	
Sultz	Eur.	France	47 53 10 N	7 14 32 W	0 28 58 W	
Surat	Aſia	India	21 10 0 N	72 22 30 E	4 49 30 E	

The Latitudes and Longitudes of Places.

T.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Table Iſland	Aſia	N. Hebrides	15 38 0 S	167 7 0 E	11 8 28 E	
Tanna	Aſia	Pacif. Ocean	19 32 25 S	169 41 5 E	11 18 44 E	3 0
Taoukaa (Iſle)	Aſia	Pacific Ocean	14 30 30 S	145 9 30 W	9 40 38 W	
Taraſcon	Eur.	France	43 48 20 N	4 39 36 E	0 18 38 E	
Tarbes	Eur.	France	43 13 52 N	0 3 59 E	0 0 16 E	
Taſſacorta	Africa	Iſle Palma	28 38 0 N	17 58 0 W	1 11 52 W	
Temontengis	Aſia	Soloo	5 57 0 N	120 53 30 E	8 3 34 E	
Teneriffe (Peak)	Africa	Canaries	28 17 0 N	16 40 0 W	1 6 40 W	
Tercera	Eur.	Azores	38 45 0 N	27 6 0 W	1 48 24 W	
Texel Iſle	Eur.	Holland	53 10 0 N	4 59 0 E	0 19 56 E	
Thionville	Eur.	France	49 21 30 N	6 10 30 E	0 24 42 E	
Thomas St. (Iſle)	Amer.	Virgin Iſles	18 21 55 N	64 51 30 W	4 19 26 W	
Thule (Southern)	Amer.	Sandwich Land	59 34 0 S	27 45 0 W	1 51 0 W	
Thury	Eur.	France	49 21 28 N	2 18 30 E	0 9 14 E	
Timor (S. W. Point)	Aſia	India	10 23 0 S	123 59 0 E	8 15 56 E	
Timor Land (S. Poi.)	Aſia	India	8 15 0 S	131 54 0 E	8 47 36 E	
Tobolſki	Aſia	Siberia	58 12 30 N	68 25 0 E	4 33 40 E	
Tolaga Bay	Aſia	New Zealand	38 21 30 S	178 33 45 E	11 58 15 E	
Toledo	Eur.	Spain	39 50 0 N	3 20 0 W	0 13 20 W	
Tomſk	Aſia	Siberia	56 30 0 N	84 59 30 E	5 39 58 E	
Tonga Tabu (Iſle)	Aſia	Pacific Ocean	21 9 0 S	174 46 0 W	11 39 4 W	
Tonnerre	Eur.	France	47 51 8 N	3 58 44 E	0 15 59 E	
Torbay	Eur.	England	50 34 0 N	3 36 0 W	0 14 24 W	
Tornea	Eur.	Sweden	65 50 50 N	24 12 0 E	1 36 48 E	
Toulon	Eur.	France	43 7 16 N	5 55 26 E	0 23 42 E	
Toulouſe	Eur.	France	43 35 46 N	1 26 21 E	0 5 45 E	
Tournan	Eur.	France	48 43 57 N	2 45 15 E	0 11 1 E	
Tours	Eur.	France	47 23 46 N	0 41 32 E	0 2 46 E	
Traitor's Head	Aſia	Erramanga	18 43 30 S	169 20 30 E	11 17 22 E	
Trieſte	Eur.	Adriatic Sea	45 51 0 N	14 3 0 E	0 56 12 E	
Trinidad	Am.	Atl. Ocean	20 15 0 S	126 42 0 W	8 26 48 W	
Tripoli	Africa	Barbary	32 53 40 N	13 5 15 E	0 52 21 E	
Troyes	Eur.	France	48 18 5 N	4 4 34 E	0 16 18 E	
Turin	Eur.	Italy	45 4 14 N	7 40 0 E	0 30 40 E	
Turnagain (Cape)	Aſia	N. Zealand	40 28 0 S	176 56 0 E	11 47 44 E	
Turtle Iſland	Aſia	Pacific Ocean	19 48 45 S	177 57 0 W	11 51 48 W	
Tyrnaw	Eur.	Hungary	48 23 30 N	17 33 45 E	1 10 15 E	

The Latitudes and Longitudes of Places.

U.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
Uliateah	Aſia	Pacific Ocean	16 45 0 S	151 31 0 W	10 6 4 W	
Upſal	Eur.	Sweden	59 51 50 N	17 38 45 E	1 10 35 E	
Uraniberg	Eur.	Denmark	55 54 38 N	12 42 44 E	0 50 51 E	
Uſhant	Eur.	France	48 28 30 N	5 4 33 W	0 20 18 W	4 30

V.

Valenciennes	Eur.	France	50 21 27 N	3 31 40 E	0 14 18 E	
Valery St.	Eur.	France	50 11 13 N	1 37 6 E	0 6 28 E	
Vallery St.	Eur.	France	49 52 12 N	0 41 10 E	0 2 45 E	
Valparaiſo	Am.	Chili	33 2 36 S	72 19 15 W	4 49 17 W	
Van Dieman's Road	Aſia	Tonga Tabu	21 4 15 S	174 56 24 W	11 39 46 W	
Vannes	Eur.	France	47 39 14 N	2 46 26 W	0 11 17 W	
Vence	Eur.	France	43 43 16 N	7 7 28 E	0 28 30 E	
Venice	Eur.	Italy	45 26 7 N	12 22 45 E	0 49 31 E	
Venus (Point)	Aſia	Otaheite	17 29 17 S	149 35 45 W	9 58 23 W	10 38
Vera Cruz	Am.	Mexico	19 9 38 N	96 0 0 W	6 24 0 W	
Verd (Cape)	Afric.	Negroland	14 43 45 N	17 30 45 W	1 10 3 W	
Verdun	Eur.	France	49 9 24 N	5 22 41 E	0 21 31 E	
Verona	Eur.	Italy	45 26 7 N	11 18 30 E	0 45 14 E	
Verſailles	Eur.	France	48 48 21 N	2 7 7 E	0 8 28 E	
Vienna (Obſerv.)	Eur.	Hungary	48 12 36 N	16 16 22 E	1 5 30 E	
Vigo	Eur.	Spain	42 14 24 N	8 28 0 W	0 33 52 W	
Vincent St. (Cape)	Eur.	Spain	37 3 0 N	8 59 26 W	0 35 58 W	
Vintimiglia	Eur.	Italy	43 53 20 N	7 37 30 E	0 30 30 E	
Virgin Gorda (Fort)	Am.	Weſt Indies	18 18 0 N	64 0 0 W	4 16 0 W	
Virgin (Cape)	Am.	Patagonia	52 23 0 S	67 54 0 W	4 31 36 W	
Viviers	Eur.	France	44 28 57 N	4 40 55 E	0 18 44 E	
Vurtzburg	Eur.	Franconia	49 46 6 N	10 13 45 E	0 40 55 E	

W.

Wakefield	Eur.	England	53 41 0 N	1 33 30 W	0 6 14 W	
Prince of Wales's Fort	Am.	New Wales	58 47 30 N	94 7 30 W	6 16 30 W	
Wanſtead	Eur.	England	51 34 10 N	0 2 30 E	0 0 10 E	
Wardhus	Eur.	Lapland	70 22 36 N	31 6 45 E	2 4 27 E	
Warſaw	Eur.	Poland	52 14 28 N	21 0 0 E	1 24 2 E	
Weſtman (Iſles)	Eur.	North Ocean	63 20 30 N	20 27 45 W	1 21 51 W	
Wexford	Eur.	Ireland	52 22 0 N	6 30 0 W	0 26 0 W	
Weymouth	Eur.	England	52 40 0 N	2 34 0 W	0 9 36 W	
Whitehaven	Eur.	England	54 25 0 N	3 15 0 W	0 13 0 W	
Whitſuntide (Iſle)	Aſia	Pacific Ocean	15 44 20 S	168 20 15 E	11 13 21 E	

The Latitudes and Longitudes of Places.

Names of Places.	Cont.	Sea or Country.	Latitude.	Longitude. In Degrees.	Longitude. In Time.	H. Wat.
			° ′ ″	° ′ ″	h ′ ″	h ′
William (Fort)	Aſia	Bengal	22 34 45 N	88 29 30 E	5 53 58 E	
Willis's (Iſles)	Am.	South Georgia	54 0 0 S	38 29 40 W	2 33 59 W	
Wilna	Eur.	Poland	54 41 0 N	25 27 30 E	1 41 50 E	
Wittenburg	Eur.	Germany	51 53 0 N	12 44 30 E	0 50 58 E	
Wologda	Eur.	Ruſſia	59 19 0 N			
Worceſter	Eur.	England	52 9 30 N	2 0 15 W	0 8 1 W	
Woſlak	Eur.	Ruſſia	61 15 0 N			
Wyke Church	Eur.	England	50 35 57 N	2 28 10 W	0 9 53 W	
		Y.				
Ylo	Am.	Peru	17 36 15 S	71 13 0 W	4 44 52 W	
York	Eur.	England	53 59 0 N	1 6 40 W	0 4 27 W	
York (New)	Am.	Jerſey	40 40 0 N	74 11 0 W	4 56 44 W	3 0
Yorkminſter	Am.	Terra del Fuego	55 26 20 S	70 8 0 W	4 40 32 W	

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CORRECTIONS AND ADDITIONS TO VOL. I.

P. 45, l. 3 ſable *r.* ſtaple. P. 50, l. 13, ſtate *r.* ſtates.

P. 53. It may with exultation be added to the account of the Population of England and Wales, that, from the recent enumeration, it muſt fall little ſhort of NINE MILLIONS AND A HALF. The population of Great Britain and Ireland may be ſafely rated at FOURTEEN MILLIONS. The abſtract of the returns, Dec. 8th, 1801, forms a folio volume of 503 pages, compriſing the population of every pariſh. At the end is the following General Total:

	Houses.			Persons.		Occupations.			
	Inhabited.	*By how many families.*	*Uninhabited.*	*Males.*	*Females.*	*Perſons in Agriculture.*	*In Trade and Manufactures.*	*Other Perſons.*	TOTAL OF PERSONS.
England —	1,567,870	1,778,420	53,965	3,987,935	4,433,490	1,524,227	1,789,531	4,606,530	8,331,434
Wales —	108,053	118,303	3,511	257,178	284,368	189,062	53,822	266,573	511,516
Army, Navy, &c.				469,188					469,188
Convicts on board the hulks				1,410					1,410
	1,575,923	1,896,723	57,476	4,715,711	4,627,867	1,713,289	1,843,353	4,873,103	9,343,178

The firſt Abſtract (printed July 1801) preſents the following ſtatement:

Regular Forces, Fencibles, and Militia, on	March 10th, 1801,	186,733
Artillery, and Engineer Forces	ditto	11,618
Seamen, and Marines in the Royal Navy	ditto	106,128
Marines at head-quarters	ditto	20,151
Seamen employed under the Board of Cuſtoms,	ditto	897
Seamen employed in regiſtered trading veſſels,	ditto	143,661
		469,188

In the complete Report the total population of London, Weſtminſter, and Southwark, is 864,845, including the pariſhes not within the Bills of Mortality, namely Mary-le-bone, Paddington, St. Pancras, Kenſington, and Chelſea, amounting to 117,802. Iſlington and Newington Butts are within the Bills. Of the other chief cities, Mancheſter is rated at 84,020; Liverpool, 77,653; Birmingham, 73,670; Briſtol, 68,645; Leeds, 53,162; Plymouth, 43,194: all the others are under 40,000.

P. 55, l. 31, ſum laſt, for 15 *r.* 18.

P. 56. In November laſt, 1801, the Miniſter adduced to the Houſe of Commons the following comparative ſtatement:

	Navy of Great Britain.			
In 1793.	Ships of the line	135	1801,	202
	Frigates and ſmaller veſſels	133		227
		268		429
	Navy of France.			
1793.	Ships of the line	80	1801,	39
	Frigates	64		35
		144		74

P. 91, l. 35. Scarborough, *r.* Scarſdale. P. 184, note *, Ranael *r.* Rannoch. P. 233, l. 20, granary *r.* treaſury.

P. 571. By the conſtitution of the 29th May 1801, Swiſſerland is divided into ſeventeen departments. The Pays de Vaud and Argovie are withdrawn from Bern; and the Griſons and Italian Bailliages form two other departments. The other cantons remain as before, with ſome additions of eccleſiaſtic lands, &c. to Glarus, Appenzel, Friburg, and Baſel. The abbatial territory of St. Gallen conſtituted the canton of Sentis by the diviſion of 1798, which ſeems to be obliterated. The new conſtitution will probably be on the French model.

P. 582, note. The doubts ſeem to be removed by the maps of Switzerland by Weiſs, ſheet 10, in which the heights are ſtated as follow, in French feet; Yungfrawhorn 11,085; Monch, 10,879; Eiger, 10,481; Finſter Aar, 11,447; Schreckhorn, 10,773; Wetterhorn, 9,966.

P. 623. The German ſecularizations are not yet adjuſted: according to floating and moſt uncertain rumours, Auſtria is to have Salzburg and Berchtoldtgaden, Pruſſia; Paderborn, Lauenberg, and Eichsfeldt. The elector of Hanover; Hildeſheim. Landgrave of Heſſia; the towns of Ameneburg and Fritzlar. The elector of Bavaria; Bamberg and Wurtzburg. It is alſo reported that the former Stadtholder is to obtain ſome provinces on the Rhine; while the former Grand Duke of Tuſcany is to hold Venice as an Auſtrian appanage.

In the treaty of Amiens, the Rio *Branco*, p. 662, ſeems merely the Portugueſe pronunciation of Rio *Blanco*, in which caſe the extenſion of French Guiana is very great.

*** *For thoſe of Vol. II. ſee the End of that Volume.*

MODERN GEOGRAPHY.

PRELIMINARY OBSERVATIONS.

THE word *geography* is derived from the Greek language, and implies a deſcription of the earth. It is ſometimes contraſted with *hydrography*, which ſignifies a deſcription of the water, that is of ſeas, lakes, rivers, &c., thus including marine charts: but, in general, hydrography is rather regarded as a province of geography. Both were anciently conſidered along with aſtronomy, as parts of *coſmography*, which aſpired to delineate the univerſe. Definitions.

Geography is more juſtly contraſted with *chorography*, which illuſtrates a country or province; and ſtill more with *topography*, which deſcribes a particular place, or ſmall diſtrict.

What is called General Geography embraces a wide view of the ſubject, regarding the earth aſtronomically as a planet, the grand diviſions of land and water, the winds, tides, meteorology, &c. and may extend to what is called the mechanical part of geography, in directions for the conſtruction of globes, maps, and charts.

Among the other diviſions of this ſcience may be named Sacred Geography, ſolely employed in the illuſtration of the Scriptures; Eccleſiaſtic Geography, which deſcribes the government of the Church, as divided into patriarchates, archbiſhopricks, biſhopricks, archdeaneries, &c. with their reſpective boundaries, often varying much from thoſe of the ſecular provinces; and Phyſical Geography, or Geology, which inveſtigates the interior of the earth, ſo far only as real diſcoveries can be made; for what have been ſtyled ſyſtems of the earth, which have conſumed the labours of many ingenious men, have no connection

with the ſolid ſcience of geology, but ought rather to be ſtyled coſmogonies, or ideal creations of planets.

But Geography, popularly conſidered, is occupied in the deſcription of the various regions of this globe, chiefly as being divided among various nations, and improved by human art and induſtry. If a ſcientific term were indiſpenſable for this popular acceptation, that of Hiſtorical Geography might be adopted, not only from its profeſſed ſubſervience to hiſtory, but becauſe it is in fact a narrative ſo nearly approaching the hiſtorical, that Herodotus, and many other ancient hiſtorians, have diverſified their works with large portions of geography, and the celebrated deſcription of Germany, by Tacitus, contains moſt of the materials adopted in modern treatiſes of geography.

Diviſions of Geography.

In this popular point of view, hiſtorical geography admits of three diviſions. 1. The Ancient or Claſſical, which deſcribes the ſtate of the earth, ſo far as it was diſcovered at different periods, but not extending further than the year of Chriſt 500. 2. That of the Middle Ages, which reaches to the fifteenth century, when the diſcoveries of the Portugueſe began to lay wider foundations of the ſcience. 3. Modern Geography, the ſole ſubject of the preſent work, which, while it embraces the moſt recent diſcoveries, ſtill remains capable of great acceſſions, particularly in Africa; not to mention more minute deficiencies.

The chief object of modern geography is to preſent the moſt recent and authentic information concerning the numerous nations and ſtates who divide and diverſify the earth; but on this ſubject it is impoſſible to attain accurate ideas without a brief introductory view of the progreſs of each nation and ſtate. Though, in ſome few inſtances, natural barriers have divided, and continue to divide, nations, yet in general the boundaries are arbitrary, ſo that the natural geography of a country, though forming an eſſential feature, hitherto treated with too much neglect in geographical works, cannot be admitted to a predominance; but on the contrary, as matter yields to mind, may rather be regarded as a ſequel in hiſtorical geography, which is chiefly occupied in deſcribing the diverſities of nations, and the conditions of the various races of mankind. On this ſubject there is no doubt room for a variety

of opinions; but after long conſideration it has appeared moſt eligible to prefer the following order: 1. The hiſtorical, or progreſſive geography of each country. 2. Its political ſtate, including moſt of the topics which recent German writers, by a term of dubious purity, call ſtatiſtic. 3. The civil geography, including objects not ſo immediately connected with the government, as an account of the chief cities, towns, &c. 4. The natural geography [1].

Order of topics.

The ancients conſidered the earth under the three grand diviſions of Aſia, Europe, and Africa; yet, as they all form one continent, the diſtinctions were arbitrary, as they often included Egypt under Aſia, and they had not diſcovered the limits of Europe towards the N. E. Modern diſcoveries have added a fourth diviſion, that of America, which, exceeding even Aſia in ſize, might perhaps as well have been admitted under two grand and diſtinct denominations, limited by the Iſthmus of Darien. It was ſuppoſed, till within theſe thirty years, that there exiſted a vaſt continent in the ſouth of the globe, and many ſchemes were formed for colonizing the wide and opulent *Terra Auſtralis*; but the ſecond navigation of the immortal Cook diſpelled this viſionary land from geography, or demonſtrated, that if any continent there exiſted, it muſt be loſt in the uninhabitable ice of the ſouth pole. Yet the wide extent of New Holland rewarded the views of enterpriſe. Too large for an iſland, too ſmall for a continent, New Holland, like the other works of nature, eludes the petty diſtinctions of man; and while geographers heſitate whether to aſcribe it to Aſia, or, with De Broſſes, to denominate it a FIFTH ſpecific diviſion of the earth, it is not improbable that the popular diviſion of four quarters of the world will continue to predominate over any ſcientific diſcuſſion [2].

Quarters of the world.

[1] This arrangement was in part ſuggeſted by the *Eſſai ſur l'Hiſtoire de Geographie* by Robert de Vaugondy.

[2] The word *quarter*, as denoting a fourth part, becomes rather a ſoleciſm, when applied to the four grand diviſions of the earth: it may be accepted in a ſecond ſenſe, equally popular in French and Engliſh (whence derived?) which ſignifies a particular region, or ſtation: yet a fifth or ſixth *quarter* of the world would not pleaſe the ear. The *Magellanica* of Cluverius and De Broſſes has faded before the light of recent diſcoveries; but the *Auſtralaſia* and *Polyneſia* of the latter are excellent and clear arrangements, now juſtly adopted by moſt men of ſcience.

Of the grand diviſions of the earth Aſia has ever been the moſt populous, and is ſuppoſed to contain about 500,000,000 of ſouls, if China, as recently averred, comprize 330,000,000. The population of Africa may be 30,000,000, of America 20,000,000: and 150,000,000 may be aſſigned to Europe*.

Face of the globe.

Recent diſcoveries have evinced that more than two thirds of this globe are covered with water; and theſe waters, whether oceans, ſeas, lakes, or rivers, are contained in hollow ſpaces, more or leſs large, which late French geographers have ſtyled *baſſins*, or baſons, by a term of little dignity. They may as well be called Concavities; while, on the other hand, the chief Convexities or Protuberances of the globe, by the French ſtyled *plateaux*, conſiſt of elevated uplands, ſometimes crowned by mountains, ſometimes rather level, as in the extenſive central protuberance of Aſia. In either caſe, long chains of mountains commonly proceed from thoſe chief convexities, in various directions; and the principal rivers uſually ſpring from the moſt elevated grounds. Though the low and fertile plains, generally perceivable for a long ſpace before rivers enter the ſea, be often depoſited by their waters, as in the Delta, and other inſtances, yet the geologiſt would in vain attempt general rules; while, as on a ſmall ſcale, deep glens are found without any rivulet, ſo on a large, vaſt and extenſive hollows will appear, without the ſmalleſt trace of their having been pervaded by a river.

Oceans.

The grandeſt concavity of this globe is filled by the Pacific Ocean, occupying nearly half of its ſurface, from the eaſtern ſhores of New Holland to the weſtern coaſt of America; and diverſified with ſeveral groups of iſlands, which ſeem as it were the ſummits of vaſt mountains emerging from the waves. This chief concavity, ſeparately conſidered, receives but few rivers, the chief being the Amur from Tatary, and the Hoan Ho and Kian Ku from China, while the principal rivers of America run towards the eaſt.

The next grand concavity is that of the Atlantic Ocean, between the ancient continent and the new. A third is the Indian Ocean.

The ſeas between the arctic and antarctic circles and the poles, have been ſtyled the Arctic and Antarctic Oceans; the latter having ſupplanted the Terra Auſtralis, and being in fact only a continuation of the Pacific,

* Auſtralaſia and Polyneſia, or New Holland and the Iſles in the Pacific, probably do not contain above half a million.

Atlantic, and Indian Oceans; while the Arctic Sea is partly embraced by continents, and receives many important rivers.

Such are the moſt profound concavities of the globe, while others are filled by more minute ſeas, as the Mediterranean, the Baltic, and others of yet ſmaller extent, till we deſcend to inland lakes of freſh water.

Rivers. Oblong concavities, ſometimes of great length, mark the courſes of the rivers; which, generally, at firſt interſect the higher grounds, till the declivity become more gentle, on their approach towards their inferior receptacles. But as general views are ſeldom preciſe, it muſt not be forgotten, as already in part obſerved, that even large rivers ſometimes ſpring from lowland marſhes, and wind through vaſt plains, unaccompanied by any concavity, except that of their immediate courſe; while, on the other hand, extenſive vales, and low hollow ſpaces, frequently occur, deſtitute of any ſtream. Rivers will alſo ſometimes force a paſſage, where nature has erected mountains and rocks againſt it; and where the *baſſin* of the French would appear to be in another direction, which the river might have gained with more eaſe; ſo eſtranged is nature from human theory. In like manner though the chief chains of mountains in Europe extend in a ſouth eaſterly and north weſterly direction, yet there are ſo many exceptions, and ſuch numerous and important variations in other parts of the globe, that theory in vain attempts to generalize. As mountains may be found in every direction of the compaſs, ſo a river may riſe from an inland lake or marſh, and force its way through rocky barriers of great elevation. In ſhort the theory of the French geographers, though juſt in general, muſt not be too widely accepted: and the book of nature muſt be regarded as the chief code of conſultation.

Continents. From the vaſt expanſe of oceanic waters, ariſes in the ancient hemiſphere, that wide continent, which contains Aſia, Europe, and Africa; and in the modern hemiſphere the continent of America, now diſcovered to form, as it were, a ſeparate iſland, divided by a ſtreight of the ſea from the ancient continent. In the latter many diſcoveries, of the utmoſt importance to geography, are of very modern date, and it is not above ſixty years ſince we obtained an imperfect idea of the extent of Siberia, and the Ruſſian empire: nor above twenty ſince ample, real,

real, and accurate knowledge of theſe wide regions began to be diffuſed. So that in fact America may be ſaid to have been diſcovered before Aſia: and of Africa our knowledge continues imperfect, while the neweſt obſervations, inſtead of diminiſhing, rather increaſe our ideas of its extent.

But the grandeſt diviſion of the ancient continent is Aſia, the parent of nations, and of civilization; on the north eaſt, and ſouth, ſurrounded by the ocean; but on the weſt divided by an ideal line from Africa; and from Europe by boundaries not very ſtrongly impreſſed by the hand of nature. The Ruſſian and the Turkiſh empires, extending over large portions of both continents, intimately connect Aſia with Europe. But for the ſake of clearneſs and preciſion, the chief merits of any work of ſcience, geographers retain the ſtrict diviſion of the ancient continent into three great parts, ſacrificing a more minute to a more important diſtinction; which, if not ſtrictly natural, is ethical, as the manners of the Aſiatic ſubjects of Ruſſia, and even of Turkey, differ conſiderably from thoſe of the European inhabitants of thoſe empires.

As Europe is the ſeat of letters and arts, and the greateſt exertions of human energy in every department; and is beſides the native region of the chief modern geographers, and that in which the readers are moſt intimately and deeply intereſted, it is always the diviſion firſt treated; though the order be arbitrary, and Ptolemy, who has been ſtyled the father of geography, begins indeed with Europe, but deſcribes Africa before Aſia *. Before proceeding more minutely to conſider the ſeveral kingdoms and ſtates, compriſed in this great diviſion of the globe, it will be proper, in compliance with an uſual and unobjectionable form, to offer a brief and general deſcription of this diſtinguiſhed portion of the earth.

* The beſt edition of his maps, Amſt. 1730, places Africa firſt.

EUROPE.

THIS part of the globe is the ſmalleſt in extent, yielding conſiderably even to Africa. From the Portugueſe Cape, ſtyled by our mariners the Rock of Liſbon, in the weſt, to the Uralian mountains in the eaſt, the length may be about 3,300 Britiſh miles; and the breadth from Cape Nord, in Daniſh Lapland, to Cape Matapan, the ſouthern extremity of Greece, may be about 2,350. The contents in ſquare miles have been eſtimated with ſuch diverſity of opinion, ſuch eſtimates being, in truth, arbitrary and only comparative, that it is ſufficient to mention the medial number of about two millions and a half. Extent.

The ancients had no juſt ideas of the boundaries of Europe, the name itſelf having ſeemingly originated from a ſmall diſtrict near the Helleſpont, as the diſtinctive name of Aſia alſo ſpread from the oppoſite ſhore. More than a third part of Europe, towards the north and eaſt, has only been known with preciſion in modern times. On the ſouth it is limited by the Mediterranean ſea; on the weſt by the Atlantic, which contains the furtheſt European iſle, that of Iceland, Greenland being regarded as a part of North America. On the north the boundary is the Arctic Ocean, embracing the remote iſles of Spitzbergen, and Novaya Zemlia, or the New Land. Toward the eaſt the boundaries admit of ſome diſcuſſion. The Uralian mountains, a grand natural limit, not extending to the Arctic Ocean, the river Cara, which flows into the ſea of Karſkoye, is admitted as a boundary. The Uralian limit extends to about 56 degrees of north latitude: to the ſouth of which the grand confines of Europe and Aſia have been ſought in the petty diſtinctions of Ruſſian governments. More natural limits might be obtained by tracing the river Oufa, from its ſource, to its junction with the Belaia. Thence along the Kama to the Volga, which would conſtitute a ſtriking natural diviſion, to the town of Sarepta; whence a ſhort ideal line, the only one admitted in this delineation, will lead due weſt to the river Don, which would complete the unaſ- Limits.

certained

certained boundary; that on the north and weſt of the Euxine being clear and preciſe.

Ancient population.

The ancient population of Europe conſiſted of the Celts in the weſt and ſouth; the Fins in the north eaſt; and the Laps or Laplanders, a diminutive race like the Samoieds of Aſia, in the furtheſt north, and who ſeem to have enriched their original rude language by adopting, in a great meaſure, that of their more civilized neighbours the Fins. Thoſe ancient inhabitants, who ſeem to have been thinly ſcattered, were driven towards the weſt and north by the Scythians or Goths from Aſia, whoſe deſcendants occupy the greater part of Europe; by the Sarmatians, or Slavonic tribes, alſo from Aſia, the anceſtors of the Ruſſians, Poles, &c. and who were accompanied by the Heruli, uſing what is now called the Lettic ſpeech, to be found in Pruſſia, Lithuania, Samogitia, Courland, and Livonia, being a-kin to the Slavonic language [3], yet with many ſhades of diſtinction. From Africa the colony of Iberi, northern Mauretani, paſſed into Spain at a very early period. The later acceſſion of Hungarians and Turks, from Aſia, may likewiſe be commemorated.

Progreſſive geography.

The progreſſive geography of Europe will be more aptly illuſtrated in the deſcriptions of each kingdom and ſtate. Suffice it here to obſerve, that the ableſt modern geographers, not excepting D'Anville himſelf, have greatly erred in their views of the ancient knowledge of Europe. Of Scandinavia the ancients only knew the ſouthern part, as far as the large lakes of Weter and Wener. The Roman ſhips explored the ſouthern ſhores of the Baltic as far as the river Rubo, or the weſtern Dwina, and diſcovered the names of ſeveral tribes along the ſhores: but of the central parts of Germany it is evident, from the maps of Ptolemy, that they had no juſt ideas; ſo that the tribes which he enumerates may be more juſtly aſſigned to the northern parts along the Baltic, or to the ſouthern on the left of the Danube. The Carpathian or Sarmatian mountains were well known, but the line of 50° or 52° of north latitude, muſt confine the ancient knowledge in the north eaſt. A ſingularity in the ancient deſcriptions has often miſled; for as the mountains, in the ſavage ſtate of Europe, were crowned or accom-

[3] Tooke's View of Ruſſia, i. 455.

panied

panied with foreſts, the ſame term was uſed in ſeveral barbarous languages to expreſs either; ſo that the ancients often place important mountains, where the hand of nature had only planted large foreſts. This remark becomes eſſential in the compariſon of ancient and modern geography. The Riphæan mountains are vainly ſuppoſed to have been the Uralian chain, which were to the ancients hid in the profoundeſt darkneſs, inſtead of a large foreſt running from eaſt to weſt. The Sevo Mons of Pliny, which he poſitively aſſigns to the north of Germany, though geographers in direct oppoſition to his text, transfer it to Norway, a region almoſt as unknown to the ancients as America, muſt be regarded as a vaſt foreſt, extending to ſome promontory: and the Venedici Montes of Ptolemy are in the like predicament, for modern knowledge evinces that no ſuch mountains exiſt. Of all ſciences, perhaps geography has made the moſt ſlow and imperfect progreſs, and the firſt reſtorers of it place at random many grand features of nature, inſtead of purſuing the recent and juſt plan, of giving an exact delineation of the country, and afterwards exploring the real extent of ancient knowledge.

The chriſtian religion prevails throughout Europe, except in Turkey, where however at leaſt one half of the inhabitants are attached to the Greek church. Wherever the chriſtian faith has penetrated, knowledge, induſtry, and civilization have followed: among the barbarous tribes in the north the progreſs was unhappily ſlow, Scandinavia remaining pagan till the eleventh century; and ſome Slavonic tribes on the ſouth of the Baltic till the thirteenth: nay it is not above a century ago, ſince the Laplanders were converted by miſſions from Denmark. The two grand diſtinctions are catholics and proteſtants, the former in the ſouth, where the paſſions are more warm, and the imagination more delighted with ſplendour: the latter in the north, where the ſatisfaction of the judgment predominates. Religion.

This univerſality of the chriſtian religion has been followed by another ſuperlative advantage, that of conſtituting all Europe, as it were, into one republic, ſo that any uſeful diſcovery made in one ſtate paſſes to the reſt with celerity. In this reſpect Europe has been compared to

ancient Greece; and it is to be hoped that Ruſſia will not prove another Macedon.

Climate. This fair portion of the globe is chiefly ſituated in the temperate zone, if ſuch diſtinctions have not vaniſhed from geography, ſince modern diſcoveries have evinced that the climate often depends on local cauſes; that the Alps in a ſouthern latitude preſent mountains of ice unknown in Lapland; that the torrid zone abounds with water and habitations, and may perhaps contain mountains covered with ſnow. Yet freedom from the exceſſive heats of Aſia and Africa has contributed to the vigour of the frame, and the energy of the mind.

Inland ſeas. In a general view of Europe, one of the moſt ſtriking and intereſting features is the number and extent of the inland ſeas, juſtly regarded as chief cauſes of the extenſive induſtry and civilization, and conſequent ſuperiority to the other grand diviſions of the globe. Had Africa been interſected by a large inland ſea from the weſt, it is probable that the bleſſings of induſtry would have been widely ſpread. Among inland ſeas the Mediterranean is juſtly pre-eminent, having been the center of civilization to ancient and modern Europe. The columns of Hercules marked its weſtern boundary, being the mountain or rock of Abyla, now called Ceuta, and Kalpe in Spain, the Gibraltar of modern fame. The length of the Mediterranean is about 2000 miles to its fartheſt extremity in Syria; but in ancient maps the length has been extended to about 2500 miles. On its northern ſide open two immenſe gulphs, that of Venice, and the Archipelago; the former being the Adriatic, the latter the Egean ſea, of the ancients. From this laſt a ſtreight, called the Helleſpont, conducts to the ſea of Marmora the claſſical Propontis: and another now ſtyled the ſtreight of Conſtantinople, the ancient Thracian Boſphorus, leads to the Euxine, or Black Sea; which, to the north, preſents the ſhallow Palus Mæotis, or ſea of Azof, the utmoſt maritime limit of Europe in that quarter. This wide expanſe of the Mediterranean is beautifully ſprinkled with iſlands, and environed with opulent coaſts, abounding with the moſt ſublime and picturesque features of nature: tides are not perceivable, except in the narroweſt ſtreights; but according to phyſiologiſts there is a current along the Italian ſhore, from the weſt to the eaſt, and towards the African coaſt

in an oppoſite direction. In the Adriatic the current runs north-weſt along Dalmatia, and returns by the oppoſite ſhore of Italy. The Mediterranean abounds with fiſh, many of which are little known in more northern latitudes. The chief fiſheries are thoſe of the tunny, of the ſword fiſh, and of the ſea dog, a ſpecies of ſhark, and of the diminutive anchovy. It is alſo the chief ſeminary of coral, now known to be the work of marine inſects. This ſuppoſed plant is of three colours, the red, the vermilion, and the white; and its greateſt height is about eleven inches. It is equally hard in the ſea, and in the air; and is generally brought up by a kind of net from the depth of 60 to 125 feet [4]. To enumerate and aſcertain ſhoals and rocks is the office of the hydrographer; but fiſhing banks are of general importance, and ſome are found near Sicily. The Black ſea is ſaid to derive its name from its black rocks, or dangerous navigation; but it is difficult to account for ſuch terms, often derived from the fertile and ſuperſtitious fancy of mariners. The ſea of Azof is polluted with mud, whence it was ſtyled Palus, or a marſh, by the ancients: it is united to the Euxine by the ſtreight of Caffa, the ancient Cimmerian Boſphorus.

The ſecond grand inland ſea of Europe is the Baltic, by the Germans called the Eaſtern Sea; whence the Eaſterlings of Engliſh hiſtory, people from the ſhores of the Baltic. This extenſive inlet opens from the German ſea, by a gulph pointing N. E. called the Skager Rack; and afterwards paſſes ſouth, in what is called the Cattegat, to the S. E. of which is the Sound of Elſinore, a ſtreight where veſſels pay a tribute of courteſy to Denmark. The Baltic afterwards ſpreads widely to the N. E. and is divided into two extenſive branches, called the gulphs of Bothnia and Finland, both covered or impeded with ice for four or five months of the northern winter. Ancient hiſtorians even report that wolves have paſſed on the ice from Norway to Jutland; and, if veracious, the rigour of the ſeaſons muſt have greatly abated. The greateſt depth of this ſea is ſaid not to exceed fifty fathoms. Swediſh phyſiologiſts pronounce that it loſes about four feet in extent in the courſe of a century; and that the water does not contain above one thirtieth part of ſalt, whereas other ſea water often holds a tenth: this

[4] Spallanzani's Trav. in the Two Sicilies, iv. 317.

freſhneſs they impute to the quantity of ice; and they alſo aſſert, that when the north wind blows, the waters become ſo freſh, that they may even be employed for domeſtic uſes. Tides are unknown, and the fiſh are few.

The third and laſt inland ſea of Europe is that called the White Sea, in the north of Ruſſia, more known in Europe, and particularly to Engliſh enterprize, before the commerce of Archangel was ſupplanted by that of Peterſburg. To Octer, in the reign of the great Alfred, it was known by the name of the Qven Sea; and the Icelandic writers ſtyled it the ſea of Ganviik, on the ſhore of which was their Biarmia. The White Sea contains a number of ſmall iſlands; but the accounts yet given have been brief and unſatisfactory.

Other ſeas. Among the other maritime diviſions may be named the German ſea, ſo called becauſe it waters the weſtern ſhores of ancient Germany, from the Rhine to the extremity of Jutland. It is now often ſtyled, with ſufficient impropriety, the North Sea, a term probably adopted by us from the Dutch. It may be regarded as a part of the Atlantic ocean, terminating at the ſtreights of Dover; whence the Britiſh Channel extends to the weſt. The bay of Biſcay is another large inlet of the Atlantic. The Briſtol Channel is rather the eſtuary, or wide frith, of the Severn. Between Great Britain and Ireland are St. George's Channel on the ſouth; the Iriſh ſea in the centre, which leads to the North Channel. That part of the Atlantic which paſſes between Scotland and the extreme range of the weſtern iſles, from Barra to Leuis, has received no diſtinct appellation, though it might be aptly ſtyled the Hebudian Channel. To the north of Scotland is the Deucaledonian ſea of the ancients; which being conſidered as extending into and throughout the Baltic, was alſo ſtyled the Sarmatian.

Arctic ocean. To the north of Europe is the Arctic ocean, the diſmal and ſolitary refervoir of myriads of miles of ice, the very ſkirts of which, floating in enormous mountains, crowned with brilliant pinnacles of every hue, delight the eye and appal the heart of the mariner. Yet this enormous waſte is, in the hand of Providence, a fertile field of proviſions for the human race. Here the vaſt battalions of herrings ſeem to ſeek a refuge from numerous foes, and to breed their millions in ſecurity. About

the middle of winter, emerging from their retreat, they ſpread in two diviſions, one towards the weſt, which covers the ſhores of America, as far as the Cheſapeak and Carolina; while a third more minute ſquadron paſſes the ſtreight between Aſia and America, and viſits the coaſts of Kamſchatka[5]. The moſt memorable diviſion reaches Iceland about the beginning of March, in a cloſe phalanx of ſurprizing depth, and ſuch extent, that the ſurface is ſuppoſed to equal the dimenſions of Great Britain and Ireland. They are however ſubdivided into numberleſs columns of five or ſix miles in length, and three or four in breadth, followed by numerous ſea fowl, and perceivable by the rippling of the water, and a brilliant reflexion like that of a rainbow. In April or May the vanguard of thoſe allotted to the Britiſh dominions reaches Shetland, and the grand body arrives in June; towards the end of which month, and through that of July, they are in the greateſt perfection, a circumſtance well known to the Dutch fiſhers, who then caught that ſuperior ſort which formed the grand ſource of the wealth of the United Provinces. From Shetland one diviſion proceeds towards the eaſt, as far as Yarmouth, where they appear in October. The other brigade paſſes to the weſt, along both ſhores of Ireland. A few ſtragglers are found at irregular periods, having proceeded beyond their powers of return; but it is generally credited, that millions regain the Arctic Ocean, and depoſit their ſpawn about the month of October.

To enumerate the ſmaller gulphs, the ſtreights, and other minute diverſities of the ſeas, either in a feeble ſeries of names, or in a dry arithmetical table, would be ſuperfluous, as they are beſt ſtudied in the maps, and as that mode of communicating ſcience is perhaps of all others the moſt uncouth and repulſive. As well might hiſtory be ſtudied by the barren repetition of a hundred names of ſtateſmen and warriors. But this account of the European ſeas muſt not be cloſed without a few brief hints on a ſubject generally neglected in works of this nature, the large Banks, or comparative ſhoals, ſuppoſed to be ridges of ſubmarine mountains, and which being frequently the reſort of cod and other fiſh, invite the attention of national induſtry. The Sand Banks.

[5] Pennant Arctic Zool. i. ccxi.

Good-

Goodwin ſands, off the coaſt of Kent, are rather dangerous to the mariner, than inviting to the fiſher; but on the coaſt of Holland there are many banks which ſupply excellent fiſh, as turbot, ſoal, plaice, &c. Further to the north is the extenſive Dogger bank, ſtretching ſouth-eaſt and north-weſt; beginning about twelve leagues from Flamborough head, and extending near 72 leagues towards the coaſt of Jutland. Between the Dogger and the Well Bank, to the ſouth, are the Silverpits of the mariners, which ſupply London with cod, a fiſh which loves the deep water near the banks, while the flat fiſh delight in the ſhallows. Near the Dogger Bank was fought the noted engagement with the Dutch in 1781. The Ore and the Lemon lie between theſe banks and the Britiſh ſhores. To the north eaſt of the Dogger bank is the Horn-riff, a narrow ſtrip extending to Jutland: the Jutts-riff is a ſand-bank ſtretching, like a creſcent, from the mouth of the Baltic into the German ſea.

The Mar Bank begins oppoſite to Berwick, but is only about fifteen miles in length. Further to the eaſt extends the Long Fortys, of great extent, from Buchan Neſs to Newcaſtle; and from forty to one hundred miles diſtant from the ſhore. From the coaſt of Buchan a bank alſo reaches acroſs the German ſea towards the Jutts-riff. What are called the Montroſe Pits, as being in the latitude of that town, though to the eaſt of the Long Fortys, are hollows, from three to four miles in diameter, from ſeventy to one hundred fathom deep, with a ſoft muddy bottom, in a bank of gravel about fifty miles long, under forty fathom of water.

In the open Atlantic the largeſt bank is that of Newfoundland, reſerved for the deſcription of the American ſeas; but there is a conſiderable bank to the weſt of the Hebudes, abounding with cod and other fiſh.

Rivers and mountains.

The chief rivers of Europe are deſcribed under the reſpective countries through which they flow. Of the vaſt Wolga, far the greater part is included in Europe: the Danube is the next in fame; and is followed by the Dnieper, or Nieper; the Rhine, and the Elbe. The moſt elevated mountains are the Alps, which are followed by the Pyrenees, and the extenſive ridge which divides Norway from Sweden. The Carpathian

Carpathian mountains, and the chain of Emineh, or Hæmus, are, with the Apennines, of inferior extent and height. In the particular deſcriptions theſe grand and immoveable features of nature, which unaccountably have only attracted due attention within theſe few years, will be found to be illuſtrated as far as the materials would permit.

Governments. The kingdoms and ſtates of Europe may be conſidered, 1. As deſpotic monarchies, as thoſe of Ruſſia and Turkey; 2. Abſolute monarchies, as Spain, Denmark, &c.; or, 3. Limited monarchies, as the Empire of Germany, kingdom of Great Britain, &c. Since the fall of Venice, and the ſubverſion of Switzerland and Holland, ſcarcely an example occurs of permanent and fixed ariſtocracy, or the hereditary government of nobles. Of democracy, or more ſtrictly ſpeaking, elective ariſtocracy, a few cities, and ſome Swiſs cantons, may preſerve a ſemblance; while France at the preſent *hour* is a military deſpotiſm, under the name of a democratical republic.

Arrangement. According to the plan of this work, already explained in the Preface, the various ſtates of Europe will be arranged in three diviſions, conſidering them according to their real conſequence, as of the firſt, ſecond, or third order; and each will be treated at a length proportioned to its weight in the political ſcale, and the conſequent intereſt which it inſpires. A ſmall ſtate may indeed ſometimes excite a more juſt curioſity than one of larger dimenſions; but ſuch conſiderations are foreign to an exact ſyſtem of Geography, detailed in a preciſe order of topics, and extended with impartial views over the whole circle of human affairs. Foreigners may object that too much ſpace is allotted to the Britiſh dominions; but the ſame objection might extend to every ſyſtem ancient and modern, as the authors have always enlarged the deſcription of the countries in which they wrote. His native country ought alſo to be the chief ſubject of every reader; nor can much uſeful knowledge, (for our knowledge chiefly ſprings from compariſon,) be inſtituted concerning foreign regions, till after we have formed an intimate acquaintance with our native land. It will alſo be underſtood that, though no point of ſcience be more ſimple or clear than the arrangement of ſtates, according to their ſeparate orders, at a given period, yet it would be alike idle and preſumptuous to decide the

preciſe

preciſe rank of a ſtate in each order; for inſtance, whether France or Ruſſia be the moſt powerful. This part of the arrangement muſt therefore be elective; and it is ſufficient that the ſtates of the ſame order be treated with a ſimilar length of deſcription.

At the beginning of the nineteenth century, the European ſtates comprized in the firſt order are: 1. The united kingdoms of Great Britain and Ireland: 2. France: 3. Ruſſia: 4. The Auſtrian dominions: 5. Thoſe of Pruſſia: 6. Spain: 7. Turkey: which laſt cannot ſo juſtly be reduced to the ſecond order; for though perhaps approaching its fall, ſtill it boaſts the name and weight of an empire.

Under the ſecond order have been arranged: 1. Holland, or the United Provinces: 2. Denmark: 3. Sweden: 4. Portugal: 5. Switzerland. In the third are conſidered the chief ſtates of Germany, that labyrinth of geography, and thoſe of Italy. The kingdoms of Sicily and Sardinia might perhaps, if entire and unſhaken, aſpire to the ſecond order; and an equal ſtation might be claimed by the junctive Electorate Palatine and Bavarian, and by that of Saxony. But as ſuch ſtates only form rather ſuperior diviſions of Germany and Italy, it appeared more adviſeable to conſider them in their natural intimate connexion with theſe countries.

This explanation being premiſed, the firſt deſcription ſhall be that of the Britiſh dominions.

ENGLAND.

CHAPTER I.

Historical or Progressive Geography.

Names.—Extent.—Original Population.—Roman, Saxon, and Norman Geography.—Hiſtorical Epochs, and Antiquities.

THE Phœnicians, the moſt ancient enlightened navigators, are generally allowed to have been the firſt diſcoverers of the Britiſh Iſlands, and to have tranſmitted their fame on the page of recorded knowledge. Bochart even ſuppoſes that the name of *Britain* originates from a Phœnician word; and another learned writer juſtly infers, that the name of *Caſſiterides*, afterwards reſtricted to the iſles of Scilly, was at firſt extended to Great Britain and Ireland[a]. This name implies in the Greek language the iſlands of *tin*; and was probably tranſlated from ſome correſponding Phœnician term. However this be, the appellations of *Albion* and *Britannia* are afterwards commemorated in Grecian and Roman geography; the firſt being probably conferred by the Celtic or primeval inhabitants, the latter by the Belgic colonies. But etymological diſquiſitions are foreign to the preſent purpoſe. Names.

The ſouthern, moſt opulent, and moſt important diviſion of Britain, has ever ſince the days of Bede, been diſtinguiſhed among the European nations by the name of *Anglia*, or England, well known to have ori-

[a] Huet. Hiſt. du Com. et de la Nav. des Anciens, p. 194. Rennell, Geog. of Herodotus, p. 4.

Names. ginated from the Angles, a nation of the Cimbric Cherſoneſe, or modern Jutland, who conquered a conſiderable portion of the country.

Extent. The Iſland of Great Britain extends from fifty to fifty-eight and a half degrees of north latitude, being of courſe about 500 geographical miles in length. Its greateſt breadth from the Land's End to the North Foreland in Kent 320 geographical miles. In Britiſh miles the length may be computed at 580, and the breadth at 370.

Boundaries. England is bounded on the eaſt by the German Ocean; on the ſouth by the Engliſh Channel; on the weſt by St. George's Channel; on the north by the Cheviot Hills, by the paſtoral river Tweed, and an ideal line falling ſouth weſt down to the Firth of Solway. The extent of England and Wales in ſquare miles is computed at 49,450; and the population being eſtimated at 8,400,000, the number of inhabitants to a ſquare mile will of courſe be 169[2].

Original Population. The earlieſt population of this fertile country, which can be traced, is that of the Gael or Southern Celts, called *Guydels* by the Welſh, who regard them as their predeceſſors; and who have juſtly remarked, that the moſt ancient names, even in Wales, are Guydelic, not Cumraig or Welſh[3]. Thoſe Gael appear to have proceeded from the neareſt ſhores of France and Flanders.

As in later times the Belgic ſettlers in this country were ſubdued by the Northern Saxons, ſo the Celtic colony from the ſouth was vanquiſhed by the Cimbri of the North, the anceſtors of the modern Welſh, who ſtyle themſelves Cymri, and their language Cymraig, to this day. The original Gaelic inhabitants appear to have almoſt entirely evacuated the country, and to have retired to Ireland, alſo originally peopled from Gaul. There, and in the Highlands of Scotland, to which a Gaelic colony paſſed from Ireland, the Gaelic dialect of the Celtic language ſtill exiſts.

To the Celtic population of England ſucceeded the Gothic. The Scythians or Goths, advancing from Aſia, drove the Cimbri or northern Celts before them; and, at a period long preceding the Chriſ-

[2] Boetticher's Tables.—Knox computes Scotland with the Iſles at 27,794. and Ireland at 27,457; France at 141,357 ſquare miles.

[3] Lluyd Arch. pref.

tian

tian Æra, had ſeized on that part of Gaul which is neareſt to Great Britain, where they acquired the provincial denomination of Belgæ[4]. Their paſſage to England followed of courſe: and when Cæſar firſt explored this iſland, he informs us, that the primitive inhabitants were driven into the interior parts, while the regions on the ſouth eaſt were peopled with Belgic colonies[5]. Thoſe Belgæ may be juſtly regarded as the chief anceſtors of the Engliſh nation; for the Saxons, Angles, and other northern invaders, though of diſtinguiſhed courage, were inconſiderable in numbers. Till a recent period antiquaries had imagined that the Belgæ uſed the Celtic language, and had execrated the cruelties of the Saxons for an extirpation which never happened. But as it appears that two thirds of England were poſſeſſed by the Belgic Goths, for ſix or ſeven centuries before the arrival of the Saxons, it is no wonder that no Celtic words are to be found in the Engliſh language, which bears more affinity to the Friſic and Dutch than to the Jutlandic or Daniſh.

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Emolliated by four centuries of Roman domination, even the Belgic colonies had forgotten their priſtine valour, and were unable to contend with their ferocious invaders from Scotland and Ireland, when chance, or invitation, conducted to their aſſiſtance new armies from the continent. The Jutes arrived in the year 449, and founded the kingdom of Kent about the year 460; they alſo took poſſeſſion of the Iſle of Wight. In 477, the Saxons firſt appear, and the kingdom of the South Saxons commences at that epoch. The Weſt Saxons arrived in the year 495. The ſixth century was conſiderably advanced, when thoſe barbaric colonies were increaſed by the Eaſt Saxons in the year 527: but the firſt appearance of the great branch of the Angles, who were to perpetuate their name in the country at large, did not occur till the year 547, when the valiant Ida led his troops to Bernicia. The Eaſt Angles taking poſſeſſion of Norfolk in the year 575, the Southern and Eaſtern coaſts were almoſt wholly in the power of the invaders, who ſoon extending their conqueſts into the interior of the country, founded in the year 585, the kingdom of Mercia, the laſt of the Heptarchy[6]. Bede pronounces Mercia to have been an Anglic kingdom; and if ſo, their population may, perhaps, have equalled that of the

[4] Diſſert. on Goths. [5] Lib. v. c. 10. [6] Beda, Chron. Sax. &c.

Names, extent, &c.

Saxons themſelves. Certain it is, that Procopius, a writer of the ſixth century, claſſes the Angli in the firſt rank of the Britiſh nations of his time[7]. We ſhall not ſtop to enquire whether his *Friſones* be the Saxons or the Belgæ. The original documents evince, that all theſe new colonies, while they conquered by ſuperior valour and hardihood, were far from being ſufficiently numerous to form even a ſemblance of population. Scarcely an inſtance occurs of their being accompanied by women; and their invaſions may, in part, be paralleled by the ſubſequent conqueſts of the Danes and Normans. Yet as the period was far more barbarous, the changes were greater; and the Belgic inhabitants, the genuine population, ſeem to have been reduced to various degrees of ſervitude, and to have conſtituted thoſe numerous ſlaves mentioned in the Anglo-Saxon times, while intermarriages and other fortunate circumſtances lightened the Norman chain. There ſeems little room to doubt that the Belgæ conſtituted the chief anceſtors of the Engliſh nation, and that their language gradually prevailed, though tinged in the north with the Anglic or Daniſh, and in the ſouth with the Saxon. This ſubject has been the more amply diſcuſſed, becauſe it is not only of eſſential importance in itſelf, but becauſe it has hitherto been clouded with many crude and erroneous aſſertions and opinions.

Progreſſive geography.

The knowledge of the progreſſive geography of any country is indiſpenſably neceſſary for the elucidation of its hiſtory. When the Romans entered Britain, they found the country, like others in the ſavage ſtate, divided among a number of ſmall tribes. With their uſual

Roman.

policy they eſtabliſhed large provinces. *Britannia prima* embraced the whole ſouthern part of England, as far as the Severn and the Thames: *Britannia ſecunda* correſponded to modern Wales. *Flavia Cæſarienſis* extended from the Thames to the Humber, a noble province, receiving its denomination from the imperial houſe of Veſpaſian, and his two ſucceſſors, under whom ſome of the moſt important conqueſts were atchieved. Veſpaſian himſelf was, in the reign of Claudius, the firſt general who began the real conqueſt of Britain[8]. The province of *Maxima Cæſarienſis* reached from the Humber to the Tyne, from

[7] Bell. Goth. lib. iv. c. 20.

[8] Tacitus, vita Agricolæ, c. 13.

the

the Merſey to the Solway [9]. In the Roman times about thirty eminent cities, or rather towns, are enumerated, about nine of which are denominated colonies, though none of them could be of much importance; for while the Roman colonies in other countries iſſued abundance of coins, hardly one real coin even of Camulodunum, the moſt important colony, can be pointed out. Our antiquaries indeed have, with erroneous patriotiſm, transferred many Gallic coins, as Britiſh, and have amuſed their readers with many fabricated pieces of antiquity; but real medalliſts, Engliſh as well as foreign, heſitate greatly on the ſubject. A more detailed account of the Roman Geography of England does not fall within the preſent plan, and the curious reader muſt be referred to Horſley and Roy, authors of deſerved eſtimation. Names extent, &c.

The Saxon Geography of England has been partly above indicated; but the following table of the Heptarchy will preſent a more complete idea. Saxon.

1. Kent comprehended the county of Kent.	
2. Suſſex, or the South Saxons.	Suſſex. Surrey.
3. Eaſt Angles,	Norfolk. Suffolk Cambridgeſhire, with the Iſle of Ely.
4. Weſſex, or the Weſt Saxons,	Cornwall. Devonſhire. Dorſet. Somerſet. Wilts. Hants. Berks.
5. Northumberland,	Lancaſhire. Yorkſhire Durham. Cumberland. Weſtmoreland. Northumberland, and the parts of Scotland to the Frith of Edinburgh.

[9] Gough's Camden, cxxix. Roy's Map, &c.

6. Eſſex,

Names, extent, &c.

6. Eſſex, or the Eaſt Saxons,	Eſſex. Middleſex. Hertfordſhire in part.
7. Mercia,	Glouceſter. Hereford. Warwick. Worceſter. Leiceſter. Rutland. Northampton. Lincoln. Huntingdon. Bedford. Buckingham. Oxford. Stafford. Derby. Salop. Nottingham. The reſt of Hertford [10].

Shires.

Ancient authors affirm, that the great Alfred inſtituted the firſt diviſion of England into SHIRES, ſo denominated from a Saxon word, ſignifying parts cut off, or diviſions. They are alſo denominated COUNTIES, as having been each governed by a diſtinct *Ealdorman*, correſponding with the Latin word *Comes*, or Count; and ſometimes tranſlated *Conſul*, and ſometimes *Comes*, by thoſe Anglo-Saxon authors, who wrote in Latin. After the Daniſh conqueſt, this officer or grandee was known by another appellation, that of *Earl*, from the Daniſh *Iarl*; which like the word Baron, in its original acceptation, implied ſimply, but by way of great eminence, a MAN. About the eleventh century theſe titles became hereditary dignities; and the government of the ſhire devolved upon the Earl's deputy, the *Vice Comes*, *Shire-reeve*, Sheriff, or manager of the ſhire. A remarkable ſubdiviſion prevails in the extenſive county of York, which was divided into three parts, implied in the Saxon word *Trythings*, now corruptly called Ridings. It is alſo

[10] Gough's Camden, cxxxi.

generally

generally believed that Alfred was the author of the ſubdiviſions of counties, called hundreds and tythings, now ſeldom mentioned except in legal proceedings, and in topographical deſcriptions. It is probable that the hundred originally contained one hundred manors, or rather farms; while the tything was reſtricted to ten. Such are the chief features of the Saxon geography of England. The capitals of the ſeveral Heptarchic kingdoms varied at the will of the Sovereign. London, which belonged to the Eaſt Saxons, maintained in ſome degree its Roman fame and eminence; but on the termination of the Heptarchy, Wincheſter was regarded as the capital of England. Further illuſtrations will ariſe under the head of Eccleſiaſtical Geography. Names, extent, &c.

It muſt not however be forgotten, that the kingdom of Northumbria, comprizing the regions north of the Humber, exiſted till the year 950, under its peculiar Sovereigns, the laſt of whom was Eric: and that even Domeſday Book, which was compiled in the time of William the Conqueror, excludes the three counties of modern Northumberland, Cumberland, and Weſtmoreland, then regarded as part of Scotland. Durham, the patrimony of St. Cuthbert, a province of eccleſiaſtic, not ſecular juriſdiction, is alſo omitted; and Lancaſhire is arranged under the diviſions of Yorkſhire and Cheſhire. The kingdom of Bernicia at one period extended to the Frith of Forth; but in the latter Saxon times the boundaries of England on the north fell conſiderably ſhort of their preſent extent. On the weſt, Offa king of Mercia reſtricted the Welſh by an extenſive barrier, the remains of which are ſtill called Offa's dyke [11]. It extended from the river Wye, along the counties of Hereford and Radnor into that of Montgomery, where it enters North Wales. It afterwards paſſes by Chirk Caſtle to the river Dee, and ends in the pariſh of Mold.

Few alterations of any conſequence appear in the Geography of England in the Norman period. The northern limits were however extended to their preſent circuit. Cumberland and Weſtmoreland were wreſted from the Scots, and the provinces north of the Humber were completely incorporated. On the weſt, Henry I, about the year 1120, having conquered a part of Wales, invited and eſtabliſhed a Flemiſh Norman.

[11] Pennant's Wales, vol. i. p. 273.

colony

Names, extent, &c.

colony [12] in Pembrokeſhire, and one or two others of the moſt ſouthern counties, which afterwards became remarkable for induſtry; a ſingular fact in modern hiſtory, though not unuſual in ancient times, and for that period a remarkable ſtretch of political wiſdom. The ſubſequent conqueſt of Wales by Edward I, and its gradual aſſimilation and aſſociation with England are ſufficiently known.

Hiſtorical epochs.

Geography has been ſtyled one of the eyes of hiſtory, a ſubſervience to which ſtudy is undoubtedly one of its grand objects; but it would, at the ſame time, be foreign to its nature to render it a vehicle of hiſtory. The proper and peculiar ſubjects of geographical ſcience are ſo ample, and often attended with ſuch difficult reſearch, that it becomes equally raſh and unneceſſary to wander out of its appropriated domain. In this work therefore it is only propoſed briefly to mention the grand hiſtorical epochs of nations; and thoſe events which have altered their boundaries and geographical relations.

The population of England by the Celts may be regarded as the firſt hiſtorical epoch.

The ſecond is formed by the Belgic colonies; who, perhaps about three centuries before the Chriſtian æra, ſeized the ſouthern and eaſtern ſhores, and advancing by degrees reſtricted the Celts to the weſt. The Belgic colonization of England is important in many points of view, as eſtabliſhing the primitive germ of the preſent Engliſh nation, and as introducing agriculture, which was not practiſed by the hunting and paſtoral tribes of the Celts [13]: nor is it improbable that ſome of the fertile diſtricts of England have known cultivation for the ſpace of two thouſand years.

3. Under Julius Cæſar the Romans can only be ſaid to have explored this iſland; and near a century elapſed before the real conqueſt was commenced by Claudius; between whoſe reign and that of Domitian, the Roman Eagle had been diſplayed as far as the Grampian mountains. The fertility of the ſoil, and the Roman arts of civilization, ſoftened the ſpirit even of the Belgic Britons, and inured them to docile ſervitude. Carauſius and other chiefs ſeized the Britiſh purple, and availed

[12] Will. Malmſb. lib. v. [13] Cæſar, lib. v. c. 10.

themſelves of the ſtrong maritime barrier to bid defiance to the Cæſars; but their troops, and their mariners, had the name of Romans; and theſe were merely ſchiſms of a vaſt empire, not aſſertions of native independence. The Britons on the contrary were afterwards forced to implore the aſſiſtance of the Romans againſt their few, but ferocious invaders. Historical Epochs.

4. After a duration of four centuries, the Roman domination yielded to that of the Saxons and Angles, nations congenerous with the Belgæ. This revolution has indelibly impreſſed the name, character, language, laws, manners, and cuſtoms of the people.

5. After repeated ravages in the preceding centuries, the Danes in the year 1016, diſperſed the armed force of England, and gave three Kings to the country, Canute, Harold, and Hardicanute; but the dominion returned to the Saxon line in the year 1042.

6. On the death of Edward the Confeſſor, what is called the conqueſt of England took place in 1066, under William the Norman. As the Normans, or Norwegians, had been ſettled in the north of France for a long time, they introduced the French language among people of rank, and even into legal procedure; a ſervile badge not even hitherto abſolutely eradicated, though the motive muſt be applauded, as the property and perſonal ſecurity of ſucceſſive generations are ſo intimately connected with the immutability of the national juriſprudence.

7. The great charter granted by John at Runnymede is deſervedly eſteemed a memorable epoch of Engliſh freedom.

8. The civil wars between the houſes of York and Lancaſter may be regarded as the next remarkable epoch. Though deſtructive of literature and the arts, they proved the perdition of a ferocious ariſtocracy; and thus eſtabliſhed by degrees the third balance of the Britiſh conſtitution in the Houſe of Commons.

9. The reformation, by delivering the nation from the heavy yoke of ſuperſtition, increaſed the national energies, and imparted freedom of thought, and a ſpirit of independence, to the individual character.

10. The civil wars under Charles I, had the uſual effect of impeding the courſe of literature and the arts; but by the violent changes and conſequences, and the exceſſes committed on both ſides, ſuperinduced

Historical Epochs.

from experience, the only teacher of practical wiſdom, a ſpirit of mutual forbearance and toleration; ſo that the ſubſequent revolutions have, to the eternal honour of the national character, been effected almoſt without bloodſhed, and by the mere weight of national will and experience.

11. The revolution under William III, and the laws enacted upon that occaſion, by the unchangeable eſtabliſhment of the proteſtant religion, and many more minute emanations of freedom, ſtill further contributed to national and individual independence; of which the acceſſion of the Houſe of Hanover conſtituted an additional pledge and confirmation.

12. The war with the American colonies forms not only an epoch of ſingular novelty, but of the moſt important conſequences. It perhaps preſented the firſt inſtance, in modern hiſtory, of a conflict between the parent ſtate and its colonies. It was little diſgraced with the atrocities of a civil war; and after a manly ſtruggle was terminated with gentleneſs and moderation. The Americans broke their colonial bonds, but could not overcome their commercial, which muſt bind them to the parent ſtate for ſome generations, if they do not even deſtroy their vaunted independence. The conſequences of this revolution to the whole human race are incalculable; whatever they may be, an Engliſhman may well exult that his brethren have commenced a large empire in a new hemiſphere, and may hope and wiſh that Aſia and Africa may alſo be animated by the Engliſh character, which even envy muſt allow is inferior to none in the ſpirit of intelligence and improvement, in benevolence and integrity, and in rational and practical freedom.

Antiquities.

The ancient monuments of a country are intimately connected with the chief epochs of its hiſtory, and particularly with the revolutions it has undergone by foreign conqueſt, or new population. The Engliſh antiquities fall of courſe into ſix diviſions. 1. Thoſe belonging to the primitive Celtic inhabitants. 2. Thoſe of the Belgic colonies. 3. Thoſe of the Romans. 4. Thoſe of the Saxons. 5. Reliques of the Danes. 6. Norman monuments. Few of thoſe remains, it muſt be confeſſed, throw much light upon hiſtory; but many of them being intereſting and curious in themſelves, they deſerve the attention of the traveller and geographer.

A radical

ANTIQUITIES. Belgic.

A radical miſtake in the ſtudy of Engliſh antiquities has ariſen from the confuſion of the Celtic and Belgic languages and monuments. The Druids have deſervedly attracted much curioſity and reſearch; but it would be erroneous to impute to them, as is uſual, the whole of our earlieſt remains. Cæſar ſpeaks of Druidiſm as a recent inſtitution; and ſuch being the caſe, it is probable that it originated from the Phœnician factories, eſtabliſhed in wooden fortreſſes on the coaſt, the uſual practice of commercial nations, when trading with ſavage or barbarous races. The tenets correſpond with what little exiſts of Phœnician mythology, and the miſſionaries of that refined people might be not a little zealous in their diffuſion. However this be, the ancient authors, from whom we derive our ſole authentic information concerning the Druids, minutely deſcribe their religious rites, but are totally ſilent concerning any monuments of ſtone being uſed among them. On the contrary, they mention gloomy groves, and ſpreading oaks, as the only ſcenes of the Druidic ceremonies. Yet our antiquaries will even infer, that Stonehenge is a Druidic monument, though it be ſituated in an extenſive plain, where not a veſtige of wood appears, and where the very ſoil is reputed adverſe to its vegetation.

It might, perhaps, be a vain effort of antiquarian inveſtigation, to attempt to diſcriminate the remains of the earlieſt inhabitants from thoſe of the Druidic period; indeed, if we ſet aſide the authorities of modern antiquaries, commonly viſionary and diſcordant, there is no foundation whatever for any ſound or real knowledge of the ſubject. The following have been eſteemed druid monuments by Borlaſe: 1. Single ſtones erect: 2. Rock idols and pierced ſtones: 3. Rocking-ſtones uſed as ordeals: 4. Sepulchres of two, three, or more ſtones: 5. Circular temples, or rather circles of erect ſtones: 6. Barrows or tumuli: 7. Cromlechs, or heaps of ſtones: 8. Rock-baſons, imagined to have been uſed in Druidic expiations: 9. Caves, uſed as places of retreat in time of war[14]. But as moſt of thoſe relics may alſo be found in Germany and Scandinavia, it becomes hazardous to pronounce whether they be Gothic or Celtic; and, as we learn from ancient authors that the Germans had no Druids, to beſtow the name of Druidic, upon ſuch monuments, is the mere wantonneſs of conjecture.

[14] See Enquiry into Hiſt. of Scotl. vol. i. p. 409.

ANTIQUITIES.

It is, however, moſt probable, that the earlieſt inhabitants, as is ever the practice in the infancy of ſociety, made uſe of wood, not ſtone, in their religious as well as in their domeſtic erections. If we ſurvey the various ſavage regions of the globe, we ſhall ſeldom or never perceive the uſe of ſtone; and it is certainly juſt to infer, that the ſavages of the Weſt, were not more ſkilful than thoſe of the Eaſt; nor thoſe of the old continents and iſlands, than thoſe of the new. However this be, a learned ignorance upon ſuch topics, is preferable to an aſſumed and imaginary knowledge.

But as many of theſe monuments are found in Germany, Scandinavia, and Iceland; and as the Icelandic writers in particular, often indicate their origin and uſe, which are unknown in the Celtic records, there is every reaſon to attribute them to a more advanced ſtage of ſociety, when the Belgic colonies introduced agriculture, and a little further progreſs in the rude arts of barbariſm. The nature of this work will not admit a formal inveſtigation of ſuch topics, but a few remarks may be offered on Stonehenge, a ſtupendous monument of barbaric induſtry. Inigo Jones in attempting to prove that it is Roman, only evinces that no talents can avail when ſcience is wanting, and that antiquities require a ſevere and peculiar train of ſtudy. Doctor Stukeley, a viſionary writer, aſſigns Stonehenge to the Druids; while Dr. Charlton perceiving that ſuch monuments are found in Denmark, aſcribed it to the Danes. If the latter had conſidered that the Belgæ were a gothic nation of ſimilar language and inſtitutions, he might with more juſtice have extended its antiquity. From the Icelandic writers[15] we learn, that ſuch circles were called *Domh-ringr*, that is literally *Doom-ring*, or circle of judgment, being the ſolemn places where courts were held, of all kinds and dignities, from the national council down to the baronial court, or that of a common proprietor of land, for adjuſting diſputes between his *villani* and ſlaves. The magnificence of Stonehenge loudly pronounces that it was the ſupreme court of the nation, equivalent to the *Champs de Mars et de Mai* of the Franks, where the king and chiefs aſſembled in the circle, and the men capable of arms in the open plain; nor is it improbable that the

[15] Landnama Saga, &c. &c.

chiefs

chiefs aſcended the tranſverſe ſtones, and declared their reſolves to the ſurrounding crowd, who, in the deſcription of Tacitus, diſſented by loud murmurs, or applauded by claſhing their ſhields [16]. This idea receives confirmation from the circumſtance that the Belgæ peculiarly ſo called, as being the chief and ruling colony of that people, were ſeated in the ſurrounding province, and *Sorbiodunum*, now Old Sarum, was their capital city. ANTIQUITIES.

Similar circles of ſtone, but far inferior in ſize, are found in many parts of Great Britain and Ireland; and ſeveral undoubtedly as late as the Daniſh inroads and uſurpations, the practice being continued by that people at leaſt till their converſion to chriſtianity, in the tenth and eleventh centuries. Some of the ſmalleſt, as we learn from the northern antiquaries, were merely places of family ſepulture. At a later period the circles of judgment, which had been polluted with human ſacrifices, and other pagan rites, were abandoned; and the great courts were held on what were called *Moot-hills*, or hills of meeting, many of which ſtill exiſt in the Britiſh dominions, and in the Netherlands. They commonly conſiſt of a central eminence, on which ſat the judge and his aſſiſtants; beneath was an elevated platform for the parties, their friends, and *conpurgators*, who ſometimes amounted to a hundred or more; and this platform was ſurrounded with a trench to ſecure it from the acceſs of the mere ſpectators. Of the other monuments of this period, a more brief conſideration muſt ſuffice. When a monarch, or diſtinguiſhed general, was buried, a barrow or hillock was erected to preſerve his name and memory to future ages: the ſize depending on the reputation of the perſon, which attracted a ſmaller or larger number of operators. Such monuments are very ancient, and even to this day denote the ſepulchres of ſome of the heroes of the Trojan war [17]. In later times a large ſingle ſtone erected was eſteemed a ſufficient memorial: ſuch ſingle ſtones alſo ſometimes appear as monuments of remarkable battles, or merely as boundaries. The caves are familiar to moſt nations in an early ſtate of ſociety.

The Belgic relics are followed by thoſe of the Romans, which are moſtly objects of mere curioſity, and rarely throw the ſmalleſt ROMAN.

[16] Germ. xi. Hiſt. v. 17. [17] Chevalier, Dallaway, and Morritt.

light

Antiquities.

light upon the page of hiſtory. Amphitheatres are ſaid to be ſtill viſible at Silcheſter, in Hampſhire, and ſome other places. The Roman caſtle at Richborough, the ancient Rutupiæ in Kent, preſents conſiderable remains of a maſſy wall cemented with ſurpriſing firmneſs. The Roman ruins in this country are commonly compoſed of ſtone or flint, with ſtrata of flat bricks at conſiderable intervals. The moſaic pavements, hypocauſts, &c. are generally the remains of the villas of opulent Romans, ſcattered over the country. The greateſt number of Roman inſcriptions, altars, &c. has been found in the North, along the great frontier wall, which extended from the Weſtern Sea, to the eſtuary of Tyne. This vaſt wall is juſtly eſteemed the moſt important remain of the Roman power in England, as that of Antoninus is in Scotland. The extent was about 70 miles, and its conſtruction, forts, &c. have been illuſtrated by the labour of ſeveral antiquaries.

Numerous are the more minute relics of the Romans in England, as coins, gems, weapons, ornaments, and the like; among which, however, the ſilver diſh belonging to the Duke of Northumberland, deſerves eſpecial mention. One of the grand cauſes of the civilization, introduced by that ruling people into the conquered ſtates, was the highways, which form, indeed, the firſt germ of national induſtry, and without which neither commerce nor ſociety can make any conſiderable progreſs. Conſcious of this truth, the Romans ſeem to have lent particular attention to the conſtruction of roads in the diſtant provinces; and thoſe of England, which may ſtill be traced in various ramifications, preſent a laſting monument of the juſtice of their conceptions, the extent of their views, and the utility of their power. A grand trunk, as it may be called, to anticipate the language of our inland navigations, paſſed from the South to the North, and another to the Weſt, with branches in almoſt every direction that general convenience and expedition could require. What is called the Watling-ſtreet, led from Richborough, in Kent, the ancient Rutupiæ, N. W. through London to Cheſter. The Ermin-ſtreet paſſed from London to Lincoln, thence to Carliſle, and into Scotland, the name being ſuppoſed to be corrupted from *Herman*, which means warrior, as the chief wars lay in the North.

The Foſſe Way is ſuppoſed to have led from Bath and the weſtern regions, N. E. till it joined the Ermin-ſtreet. The laſt celebrated road was the Ikenild, or Ikneld, ſuppoſed to have extended from near Norwich, S. W. into Dorſetſhire [18]. ANTIQUITIES.

The Saxon antiquities in England are chiefly edifices, ſacred or ſecular; many churches remain which were altogether, or for the moſt part, conſtructed in the Saxon period; and ſome are extant of the tenth, or perhaps the ninth, century. The vaults erected by Grimbald, at Oxford, in the reign of Alfred, are juſtly eſteemed curious relics of Saxon architecture. Mr. King has ably illuſtrated the remains of the Saxon caſtles. The oldeſt ſeem to conſiſt of one ſolitary tower, ſquare or hexagonal: one of the rudeſt ſpecimens is Coningſburg Caſtle, in Yorkſhire; but as that region was ſubject to the Danes, till the middle of the tenth century, it is probably Daniſh. Among the ſmaller remains of Saxon art, may be mentioned the ſhrines for preſerving relics, which ſome ſuppoſe to preſent the diminutive rudiments of what is ſtyled the Gothic architecture; and the illuminated manuſcripts which often afford curious memorials of the ſtate of manners and knowledge. Saxon.

The Daniſh power in England, though of conſiderable duration in the North, was in the South brief and tranſitory. The camps of that nation were circular, like thoſe of the Belgæ and Saxons, while thoſe of Roman armies are known by the ſquare form: and it is believed that the only diſtinct relics of the Danes, are ſome caſtles to the north of the Humber, and a few ſtones with Runic inſcriptions. Daniſh.

The monuments ſtyled Norman, rather to diſtinguiſh their epoch than from any information that Norman architects were employed, are reputed to commence after the conqueſt, and to extend to the fourteenth century; when what is called the rich Gothic began to appear, which, in the ſixteenth century, was ſupplanted by the mixed; and this in its turn yielded to the Grecian. In general the Norman ſtyle far exceeds the Saxon in the ſize of the edifices, and the decoration of the parts. The churches become more extenſive and lofty, and Norman.

[18] Gough's Britiſh Topography, I. 10.

though

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though the windows retain the circular arch, they are larger and more diverſified; the circular doors are feſtooned with more freedom and elegance; and uncouth animals begin to yield to wreaths of leaves and flowers. The ſolitary keep, or tower, of the Saxon caſtle, is ſurrounded with a double wall, incloſing courts and dwellings of large extent, defended by turrets and double ditches, with a ſeparate watch-tower, called the Barbican. Among others the Cathedrals of Durham and Wincheſter, may be mentioned as venerable monuments of Anglo-Norman architecture; and the caſtles are numerous and well known. What is called the Gothic, or pointed arch, is generally ſuppoſed to have firſt appeared in the thirteenth century; and in the next it became univerſal in religious edifices. The windows diffuſed to great breadth and loftineſs, and divided into branching interſtices, enriched with painted glaſs, the cluſtering pillars of exceſſive height, ſpreading into various fret-work on the roof, conſtitute, with decorations of ſmaller note, what is called the rich Gothic ſtyle, viſible in the chapel of King's College, at Cambridge, and many other grand ſpecimens in this kingdom. The ſpire correſponds with the interior; and begins about the thirteenth century, to riſe boldly from the ancient tower, and diminiſh from the ſight in a gradation of pinnacles and ornaments.

Rich Gothic.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtic Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenues.—Political Importance and Relations.

THE church of England is eſtabliſhed upon a moſt peculiar baſis, and truly characteriſtic of a moderate and judicious nation. As in the political ſyſtem, extremes, the uſual concomitants of inexperience, are carefully avoided, and deſpotiſm or anarchy, from whatever ſource, monarch, nobles, or people, prevented, as far as human wiſdom can deviſe; ſo in the church, while the papal power, and other catholic chains are proſcribed, the other extremes, tending to looſe democracy, are equally avoided. It is the only reformed church which has retained the epiſcopal form in its ancient ſplendour; for though Biſhops may alſo be found in Denmark, Sweden, Norway, &c. they are rather inſpectors of the conduct of the clergy, and of the modes of education, than prelates endowed with ſenatorial rank and dignity. In England, on the contrary, the biſhops are peers of parliament, and have the ſtyle and importance of nobility. Yet the creed of the Engliſh church is rather Calviniſtic than Lutheran. But the ſpecial tenets of the Engliſh church are ſufficiently explained in the thirty-nine articles; and a brief idea of its government will be more pertinent to the preſent purpoſe. Religion.

The orders of biſhops, prieſts, and deacons, compoſe the body of the clergy. Upon his diſpute with the Pontiff, to avoid any claims whatever of ſuperiority, Henry VIII ſeized the title of Supreme Head of the National Church, and iſſued ſeveral medallions with inſcriptions in Hebrew, Greek and Latin, to commemorate this new prerogative, which is, indeed, important, as it blends the eccleſiaſtic with the civil adminiſtration. Next in dignity and power are the Archbiſhops of Church of England.

Church. Canterbury and York. The firſt is ſtyled Primate of all England, and precedes all perſons, except the royal family. He has the power of probate of all teſtaments within his province, and of granting ſeveral diſpenſations concerning benefices: he has, alſo, four courts of judicature, that of Arches, of Audience, of Prerogative, and of Peculiars. The Archbiſhop of York is ſtyled Primate of England, but in prerogative and juriſdiction yields greatly to the firſt Metropolitan[1] The Archbiſhopric of York extends over the counties of Northumberland, Durham, Cumberland, Weſtmoreland, Cheſhire, Lancaſhire, and the Iſle of Man, beſides its proper and peculiar dioceſe, of the greateſt part of Yorkſhire and Nottinghamſhire. That of Canterbury compriſes the other counties; and has its peculiar dioceſe, being a great part of Kent. The archiepiſcopal office is rather a dignity than a juriſdiction, and the primates rarely interfere in any dioceſes except their own. They are appointed by the king, in the ſame manner as the biſhops, by what is called a *Congé a'Elire.*

Biſhops. Upon any vacancy in an epiſcopal ſee, the dean and chapter apply to the king, who returns a *Congé d'Elire*, naming the perſon to be choſen[2]. A chapter of the prebendaries is then ſummoned by the dean, and they are conſtrained under the penalty of a *præmunire* to elect the perſon nominated. The ſolemnity is completed by the royal aſſent, under the great ſeal, and by the confirmation and conſecration, performed by the metropolitan, or in his name. The prelate afterwards pays homage to the king for his temporalities, or the baronies connected with the ſee; and compounds for the firſt fruits, that is, the revenue of the firſt year, which is paid to the corporation for increaſing the benefices of the poor clergy. The omiſſion of conſecration is the only difference when a biſhop is tranſlated to another ſee; and when an archbiſhop is nominated, the king appoints four or more biſhops to officiate at the confirmation.

The biſhop alone may ordain deacons and prieſts, dedicate churches and burial grounds, and adminiſter confirmation[4]. In former times

[1] Chamberlayne, p. 3. 38th edit. 1755, 2 vol. 8vo.
[2] Chamberl. 140. Blackſtone, b. i. c. 11. [3] Chamberl. p. 63.

epiſcopal

epiſcopal juriſdiction extended to the licenſing of phyſicians, ſurgeons, and ſchoolmaſters, and to the conjunction of ſmall pariſhes. At preſent it chiefly embraces queſtions of births, marriages, deaths, and teſtaments, and any delinquencies of the clergy; to which body, indeed, their attention is now chiefly confined, and they rarely, except in parliament, interfere in ſecular ſubjects. The Biſhop of Sodor and Man has no place in parliament. All the other biſhops are barons, and peers of the realm, by three different claims; in right of the baronies attached to their ſees, as barons ſummoned by writ, and as barons by patent, a form which accompanies their conſecration [4]. Their privileges approach the regal; they are the ſole judges in their own courts, and iſſue writs in their own names, not in the royal ſtyle uſed by other courts. They can depute their authority, which no other judge can; and their epiſcopal power of conferring orders, &c. may be exerted in any Chriſtian country, while lay peers are only acknowledged in the country whence they derive their dignities [5]. To paſs other more minute privileges, the Biſhop of London, as preſiding over the capital, has the precedence of all the others. The ſee of Durham conſtitutes a county palatine, with great powers and prerogatives: the authority and patronage of the biſhop are of courſe very extenſive, and even the king's judges only ſit in his dioceſe by his permiſſion. The Biſhop of Wincheſter is the third in dignity, but eſteemed the firſt in opulence, as the large civil liſt of Durham, while it adds power, diminiſhes revenue. Theſe three biſhops precede all the reſt, who take place according to the ſeniority of conſecration.

Churches.

To every cathedral in England belong ſeveral prebendaries as canons, and a dean, ſo ſtyled as is ſaid, *(Decanus,)* becauſe he anciently preſided over ten canons [6]. In the old quaint language he was called one of the biſhop's eyes, while the archdeacon, who had charge of the deacons, was reputed the other. The dean and the chapter of prebendaries aſſiſt the biſhop in eccleſiaſtic affairs. The prebendaries are ſo ſtyled from the prebend, or *pars præbenda*, portion of land or income allotted to them; and with the dean form a body, college, or corporation; and

Prebendaries, &c.

[4] Chamberl. 67. Blackſtone, b. i. c. 11. [5] Chamberl. 68. [6] Ibid. 69.

Church. they have ſeveral privileges ſuperior to the common or minor canons. At the reformation their ſalaries were moſtly converted into money, but thoſe of Durham preferred the ancient portions of land, which having prodigiouſly increaſed in value, they are now ſtiled golden prebends, being worth from 800*l.* to 1200*l.* a year, while the biſhop, out of 9000*l.* a year, has to ſupport a great and unavoidable expenditure.

Archdeacons. The next order is that of the Arch-deacons, amounting in all to about ſixty; their office is to inſpect the moveables of the churches, to reform ſlight abuſes, and to induct into benefices. Arch-prieſts, who, on the Continent, ſhare the labours of the arch-deacon, on a ſmaller ſcale, being ſuperintendents over a few pariſhes, were in England alſo ſtyled rural deans, but are now unknown. Subdiviſions of government are ſo much controuled by the very nature of human affairs, that the power of the arch-prieſt almoſt correſponded with the Scotiſh preſbytery, while the provincial ſynods are ſimilar to biſhopricks.

Clergy. Of the clergy in general, the loweſt order is that of deacons, whoſe office formerly was to ſuperintend the poor; the ancient donations to the church being always aſſigned in three diviſions, one to the poor, another for repairs, and the laſt for the clergy. At preſent the deacon's office is reſtricted to baptiſm, to reading in the church, and aſſiſting the prieſt at the communion, by handing the cup only. Deacon's orders cannot be canonically received before the age of twenty-three years, thoſe of a prieſt require twenty-four, and a biſhop muſt be thirty.

Curate. The curate is a clergyman appointed to officiate for another, and is ſo named from his having the care of ſouls; hence the French rather apply the term to the rector. If the predial, or great tythes of the pariſh, be impropriated, or converted into ſecular hands, the prieſt is

Vicar. termed a vicar, a name originally implying that they were the *vicarii*, or deputies of the rector; but if the tythes be entire the prieſt is ſtyled

Rector. rector. The churchwardens ſuperintend the repairs and decorations of

Churchwardens. the church, and the requiſites for divine ſervice, and collect the alms of the pariſhioners; they are annually elected at Eaſter, and have ſome-

ſometimes ſideſmen, a kind of aſſiſtants. The ſacriſtain, corruptly called ſexton, originally had the care of the furniture and plate of the church; and by a ſtill greater corruption, the appellation is now applied to the grave-digger, when it ought to have been conferred on the pariſh-clerk. CHURCH.

The clergy in general enjoy ſome peculiar privileges. Their goods are free from tolls in fairs and markets: they cannot be compelled to any office, civil or military: they are only amerced according to their temporal eſtate: nor are they aſſeſſed for a robbery committed in the hundred, or for watching, warding, high-ways, &c. &c.

Eccleſiaſtical courts ſtill retain conſiderable power: the convocation, conſiſting of the archbiſhops and biſhops, with a lower houſe of 150 members, only meets for the ſake of form; but have not been allowed to deliberate ſince the reign of Anne [7]. Convocations.

Next in dignity is the court of delegates, acting by a ſpecial commiſſion under the great ſeal; and to whom an appeal lies from the higheſt metropolitan court. The court of arches is ſo ſtyled, becauſe it was held in the arches of the church of St. Mary-le-bone, London, but now in the great hall, Doctors Commons; only doctors of the civil law are allowed to plead [8]. The court of audience is always preſided by the archbiſhop himſelf, who decides any doubts concerning the admiſſion to benefices, and diſpenſation of the bans of matrimony. Courts.

The next court is that of Prerogative, which judges of eſtates fallen by will, or inteſtate; the prerogative-office is likewiſe in Doctors Commons. The court of Peculiars refers to ſeveral peculiar pariſhes, exempt from the juriſdiction of the biſhops, but here amenable: the judges are ſole and without jury.

7 Chamberl. 70,1. 76. Gough's Cam. i. 147. Blackſtone, p. 111. c. v.

8 The degrees are only taken at the Univerſities, yet they chiefly practiſe in London, a college being purchaſed for their uſe, by Dr. Henry Hervey, where they commuued together in a collegiate manner; whence the name of Doctors Commons, more properly called the College of Civilians, near St. Paul's, which being conſumed in the fire of London, was rebuilt in 1672. The Procurators, or Proctors, of theſe courts, are admitted by the Archbiſhop's mandate, acting as the Solicitors in other courts.

The

Ecclesiastical Geography.

The eccleſiaſtical geography of England may be ſeen in the following table:

Province of Canterbury.

1. Biſhoprick of London, containing Eſſex, Middleſex, and part of Hertford.

2. Winchieſter.—Surry, Hampſhire, Iſles of Wight, Jerſey, Guernſey, and Alderney.

3. Litchfield and Coventry.—Stafford, Derby, and part of Warwick and Shropſhire.

4. Lincoln.—Lincoln, Leiceſter, Huntingdon, Bedford, Buckingham, and part of Hertford.

5. Ely.—Cambridgſhire.

6. Saliſbury.—Wilts and Berkſhire.

7. Exeter.—Cornwal and Devon.

8. Bath and Wells.—Somerſetſhire.

9. Chicheſter.—Suſſex.

10. Norwich.—Norfolk, Suffolk, and a ſmall part of Cambridge.

11. Worceſter.—Worceſter, and part of Warwick.

12. Hereford.—Hereford, and part of Shropſhire,

13. Rocheſter.—Part of Kent.

14. Oxford.—Oxfordſhire.

15. Peterborough.—Northampton and Rutland.

16. Glouceſter.—Glouceſterſhire.

17. Briſtol.—The City of Briſtol, part of Glouceſterſhire, and County of Dorſet.

18. Landaff.—Glamorgan, Monmouth, Brecknock, and Radnor.

19. St. David's.—Pembroke, Cardigan, and Caermarthen.

20. St. Aſaph.—The greateſt part of Flint, Denbigh, and Montgomery, and ſome part of Shropſhire.

21. Bangor.—The counties of Angleſey, Caernarvon, Merioneth, and part of Denbigh and Montgomery.

Province of York.

22. Durham.—Durham and Northumberland.

23. Carliſle.—Great part of Cumberland and Weſtmoreland.

24. Cheſter.

24. Cheſter.—Cheſhire, Lancaſhire, Richmondſhire (which is part of York); with part of Cumberland and Weſtmoreland. CHURCH.

25. Iſle of Man.

The valuations in the king's books are omitted, becauſe even the comparative valuation would lead to ideas wholly erroneous. Several changes have taken place in the number and ſituations of the biſhopricks ſince Chriſtianity was firſt eſtabliſhed in this country, but theſe rather belong to the province of the antiquary.

Thoſe who differ in tenets or forms from the eſtabliſhed church may, in general, be ſtyled Diſſenters, though the term be more ſtrictly applied to the Preſbyterians and Independents. The other principal claſſes of diſſidents, are the Papiſts, Methodiſts, Quakers, the Anabaptiſts, the Swedenborgians, and the Unitarians; the laſt claſs denying the Trinity, and believing only in one God, is now intermingled with the two firſt, who have conſiderably relaxed the ſtrictneſs of their diſcipline. The Independents aſſert, that each congregation has a right to regulate itſelf, while the Preſbyterians unite churches under various diviſions, provincial and national. The clerical ariſtocracy of the Preſbyterians was obtruded with great haughtineſs upon the Engliſh nation, during the civil war in the laſt century, and was rendered the more odious, becauſe it admitted no toleration: hence the Engliſh found that they had only exchanged one yoke for another, or rather eaſe for ſlavery, as ten preſbyters amounted to one biſhop, and ſuperadded the petulance and moroſeneſs of individual inquiſitors. Milton, and other friends of freedom, ſoon began to ſatyrize the whole ſect, and to fly for refuge to the independents, whoſe benevolence or addreſs granted univerſal toleration. To this body Cromwel lent an iron hand; and, after annihilating the preſbyterian power in England, in a great meaſure ſubverted that of Scotland. The intolerant ſpirit of the preſbyterians originated with their apoſtle Calvin, whoſe cruelty to Servetus was balanced by ſurpriſing talents in clerical polity; it rendered their power ſingularly adverſe to letters and taſte, and no man of ſcience who has ſtudied the literary hiſtory of this country, would wish for the revival of ſuch domination. But at preſent Calvin would not recognize his diſciples, as they have abandoned their polemical thiſtles,

Church. and cultivate the moſt elegant productions of the literary field. The papiſts uſed chiefly to abound in Lancaſhire, Staffordſhire, and Suſſex; they had potent chiefs, and were a formidable body; but the paſſage from ſuperſtition to contempt is ſo natural, that many have fled to the oppoſite extreme. Thoſe who retain their faith, generally diſplay moderation, which has been naturally increaſed by the late privileges extended to them.

The methodiſts are extremely numerous and reſpectable. They ſeem to allow the propriety of the creed and government of the church of England; but they require a more ſtrict life, more fervent devotion, and more frequent and ſerious attendance upon divine worſhip, than is enforced by the eſtabliſhment. A philoſopher may well envy the mild creed, and univerſal charity, or fraternal love of the quakers; while he muſt allow with a ſigh, that a nation of quakers could not exiſt, except all nations were of the ſame perſuaſion. The anabaptiſts diſown infant baptiſm, and bathe the adult diſciple. The learned Whiſton admired their tenets, and their practice of anointing the ſick with oil, which as he believed operated with miraculous power. The Swedenborgians derive their name from the Baron Swedenborg, a nobleman who exchanged his native country of Sweden, for a reſidence in England. After having publiſhed two folio volumes in the Latin language, upon the art of exploring mines, he was ſeized with a violent fever, and with great difficulty recovered. In his diſordered imagination he ſeemed to maintain a frequent intercourſe with the ſpiritual world; and he has publiſhed twenty or more vaſt volumes in quarto, alſo in the Latin tongue, replete with curious metaphyſical ratiocination, interſperſed with viſions which are ſometimes narrated with high poetical ſpirit and elegance. His ſyſtem is ſo much adapted to the ſtrongeſt propenſities of human nature, that his diſciples increaſed with great rapidity. His chief tenets are, that there is but one perſon of the Deity, namely, the Lord Jeſus Chriſt, that the day of judgment is already paſſed, &c. &c. but his moſt alluring tenets partake of Mahometaniſm, in repreſenting the connubial pleaſures, and the other enjoyments of a future world, which he paints as ſimilar to this ſtate of exiſtence

exiſtence, but far exceeding it in the gratifications of every ſenſe, whether mental or corporeal. GOVERNMENT.

The conſtitution of England, the peculiar boaſt and glory of the country, and an object of admiration to other ſtates, though attempted to be deſcribed by Monteſquieu, has been little underſtood by foreigners, for it preſents ſuch an infinite number of practical ramifications, and is ſo intimately connected with the ſpirit and manners of the people, that a number of years would be required to feel and ſtudy its real effects; and even after the longeſt preparation, the beſt deſcription muſt be but a portrait, devoid of life and of vital expreſſion. A faint ſketch alone can be here expected, and the fidelity of the outline muſt compenſate for the want of detail.

The conſtitution of England is a limited monarchy, counterpoiſed by two ſenates, one of hereditary peers, the other of repreſentatives, who are, or ought to be choſen by the people. Such ſenates were not unknown to the other European nations, and have rather ſunk into diſuſe from their own perverſion of their power, than from the deſpotiſm of the ſovereigns. In France, long before the States General were diſcontinued, their meetings had been execrated by the people; as inſtead of defending their privileges, the members only attended to their own private intereſts, and impoſed exorbitant taxes, which were conſumed by the greedy courtiers, with very ſmall profit to the royal treaſury. Hence, far from incurring any blame, the kings of France acquired great popularity, and were idolized by the nation, for delivering them from the ſcourge of a venal ſenate, which only ſerved to increaſe oppreſſion and expenditure. Many other inſtances might be adduced to prove, that the very exiſtence of ſuch ſenates depends upon their forming one body and ſoul with the nation at large; but it will be ſufficient to mention the ſimilar ſuicide which happened in Denmark, in the laſt century, when the people, diſguſted with the ſelfiſh views of the ſenate, requeſted the monarch to annihilate it, and aſſume the entire power: and the abſolute form of government has ſince continued, though modulated by ſeveral counſels, which have the effect without the form of the ſenate. The Engliſh ſenates, on the contrary, owe their ſtability to a general concurrence with the popular voice;

 ariſing

GOVERNMENT.

ariſing partly from their form, and partly from a ſympathetic and gradual connection which pervades all ranks.

King.

Our lawyers pronounce that the King of England unites in his perſon the dignity of chief magiſtrate, with the ſanctity of a prieſt: and the title of Sacred Majeſty, appears to have commenced when he aſſumed the function of Head of the church. So auguſt is his perſon, that even to mention or intend his death, is a capital offence, when in all other caſes the deed alone is puniſhable. Forteſcue, in his old emphatic language, has deſcribed the office of the King of England to be "to fight the battles of his people, and to judge them with moſt righteous judgment." At his coronation he ſolemnly ſwears to govern his people according to parliamentary ſtatutes, and the law of the country; to maintain the proteſtant religion; and to preſerve the legal rights and privileges of the biſhops, clergy, and church [1].

The royal prerogatives have never been ſtrictly defined; and, perhaps it is preferable in a government, which aſpires not to ideal perfection, but to practical benefit, that they ſhould be capable of great energy and extent; as, in caſes of emergency, even republics have been forced to entruſt abſolute power to a dictator. The acknowledged prerogatives are chiefly to declare war and to make peace, a power upon which the whole of public proſperity may be ſaid to depend; to form alliances and treaties; to grant commiſſion for levying men and arms, and even for preſſing mariners; for the power of impreſſing into the land ſervice, was abandoned in the reign of William and Mary; yet in caſes of great peril, there can be little doubt but the king, in concurrence with parliament, might order every man to aſſume weapons of war. To the king alſo belong all magazines, ammunition, caſtles, forts, ports, havens, and ſhips of war: he has alſo the ſpecial management of the coinage, and determines the alloy, weight, and value [2]. The prerogative alſo extends to the aſſembling, adjournment, prorogation, and diſſolution of parliament; and to its removal to any place. The royal aſſent is neceſſary to impart validity to an act of parliament, though it has never become neceſſary to withhold it, ſince the ma-

[1] Chamberl. 52. Delolme 90.

[2] Cham. 48, &c. Blackſtone, B. I. c. iii. &c.

nagement of the ſenate has become the profeſſed office of the miniſter. The king may not only increaſe the Houſe of Peers, but that of Commons, by empowering any town to ſend burgeſſes to parliament; yet the latter prerogative appears to have become obſolete, for in the reign of Charles II the interference of the legiſlature was eſteemed neceſſary to enable the city of Durham to ſend repreſentatives. The ſovereign alſo enjoys the nomination of all officers on ſea or land; of all magiſtrates, counſellors, and officers of ſtate; of all biſhops, and other great eccleſiaſtical dignitaries; and is not only the fountain of honour but of juſtice, as he may pardon any offence, or mitigate the penalty. As Head of the church he may call a national or provincial ſynod, and with its conſent enact canons, either relating to faith or practice. The other prerogatives are more minute, and more adapted to juriſprudential enumeration. The more important exceptions are, that he cannot enact new laws, or impoſe new taxes, without the conſent of both houſes of parliament. GOVERNMENT.

The parliament, or national council, claims the next conſideration. Originally both the nobles and the commons met in one houſe; and as the greateſt national events depend, not on deſign, but on chance, or more properly, the will of heaven, it is not impoſſible that the mere inconvenience of not finding halls large enough for our then ambulatory parliaments, might have occaſioned the diviſion into two houſes, unknown in any other country, and which in fact may be regarded as the ſole foundation of Engliſh liberty. The houſe of peers may be ſaid to have exiſted from the earlieſt period of our hiſtory. Concerning the commons, authors are diſſentient, the Whigs aſſerting that they formed a part of the *Wettena-Ge-Mot*, or the aſſembly of ſages, and it is not improbable that commoners of diſtinguiſhed ability, particularly in the laws, were admitted to that great council, which chiefly conſiſted of the military chiefs. On the other hand it ſeems improbable that delegates from towns ſhould have been then known, as the idea ſeems too abſtract and complex for a rude people. The Tory writers aſſert that there is no appearance of the commons, nor any authority for their parliamentary exiſtence, prior to the 49th of Henry III, when the firſt records concerning them ariſe. However this be, the preſent conſtitution of the Parliament.

Government. parliament of England, may certainly be traced to near the middle of the thirteenth century; but it remains unknown at what preciſe time happened the important ſeparation of the commons from the peers.

Peers. The Peers of England only require the full age of twenty-one years, to become hereditary ſenators in their ſeveral degrees of duke, marquis, earl, viſcount, and baron, formerly created by inveſtiture, or ſymbolic forms, but latterly by patent[3]. The Duke is ſo ſtyled from the Latin *dux*, a leader or general; the title of Marquis ſprings from the Gothic language, and implies the commander of a march or frontier: the Earl and Baron are alſo from the Gothic, and merely imply eminent men; the Viſcount is Latin, and ſignifies the lieutenant of the count or earl. The various orders of nobility have been preſerved more pure in England than in any other country; owing partly to the laws of primogeniture, partly to their ſenatorial office, partly to the inſtitution of the college of heralds. In Germany, and ſome other countries, the nobility has fallen into comparative degradation, from the extenſion of the title to all the ſons, and from the preſumption of adventurers. The peers are privileged from perſonal arreſt, except for treaſon, felony, and a few other high offences. They are not only exempt from ſerving in juries, but muſt be tried by a jury of peers, who return their verdict, not upon oath, but upon their honour. They are addreſſed by the ceremonial form of *My Lord*, correſponding with the French *Mon Seigneur*; and the law is ſo watchful of their reputation, that the ſtatute of *ſcandalum magnatum* was enacted, to prevent any ſcandal againſt them, or diſcord between them and the people. Every peer may appoint a proxy to vote for him in the ſenate, a privilege unknown to the commons.

In the houſe of peers is placed the royal throne; but the monarch rarely appears, except at the meeting or prorogation of parliament, when he proceeds to the houſe in great ſtate; the attendance of the commons is commanded, who ſtand below the bar, and the king pronounces his ſpeech, generally the compoſition of the miniſter. The arrangement of the houſe of peers is well conceived, and produces a

[3] Chamb. 168. Blackſtone, B. I. c. ii.

grand

grand effect. The wool-ſacks upon which the chancellor, and the judges when called for their advice, are ſeated, conſtitute a remarkable feature, eſteemed ſymbolic of the ſtable commodity of the country. The appearance is yet more magnificent, when the peers ſit as judges in Weſtminſter-hall; the greatneſs of the perſons, and the ſolemnity of the occaſions, exciting impreſſions of ſingular ſublimity. GOVERNMENT.

The houſe of commons conſiſts of knights, citizens, and burgeſſes, choſen by counties, cities and boroughs, in conſequence of royal writs directed to the ſheriff. To reſtrict the tumult of popular election, it was enacted by Henry VI, that none ſhould vote for a knight of the ſhire, except freeholders worth forty ſhillings a-year, which at the preſent value of money, may be computed at twenty or thirty pounds. It is ſingular that copyholders were excluded. The elections for the cities and boroughs, are regulated by their charters and cuſtoms; ſometimes only a few citizens have a right to poll, ſometimes all the inhabitants. The members, and their menial ſervants, are exempted from arreſt in civil cauſes, on their journey to parliament, during their attendance, and on their return; nor can they be queſtioned out of the houſe for any ſentiment there uttered. It has been diſputed whether the members be not rather to be regarded as repreſenting the people at large, than as intereſted in particular diſtricts, and obliged to liſten to the voice of their conſtituents, whoſe private intereſt might, perhaps, interfere with the general benefit. The commons form the grand inqueſt of the realm, and may impeach or accuſe the greateſt peers; but their chief privilege, and upon which their whole power entirely depends, is the levying of money, in which they are deſervedly ſo jealous that they will not permit the ſmalleſt alteration in a money-bill. This amounts to an almoſt abſolute *veto* on any public meaſure, and eſpecially on war. The houſe of commons conſiſts of 558 members*; but by ſickneſs, important offices, and indiſpenſable avocations, the houſe rarely preſents above two thirds of the number. A ſpeaker, or preſident, is choſen at the meeting of every new parliament; but is uſually continued from one to another, as the office requires a complete and ready knowledge of the forms, and conſiderable abilities. Commons.

* Since the union with Ireland 658.

Acts

GOVERNMENT.

Acts of parliament, which conſtitute the ſtatute law of the kingdom, may originate in either houſe, though they commonly maketheir firſt appearance in the houſe of commons. The procedure is in the following form. Any member may move for a *bill*, (the term *act* is not applied till all the ſtages be complete,) which being ſeconded, the mover, and others who ſupport him, are ordered to prepare it. When preſented, and leave given to bring it to the table, it is read by the clerk, the clauſes are debated, and a day appointed for a ſecond reading. After it is again read and debated, it is *committed*; that is, if important it is referred to a committee of the whole houſe, during which the ſpeaker leaves the chair, and another member ſits at the clerk's table as chairman: or, if little momentous, to a private committee, which meets in a ſeparate chamber. When every paragraph has been carefully examined, every clauſe put to the queſtion, and the blanks and amendments completed, the chairman makes his report. The amendments and added clauſes are then read, and the ſpeaker puts the queſtion, whether they ſhall be read a ſecond time; and being read and debated, the bill is ordered to be ingroſſed, that is, fairly written on parchment. After the third reading, the ſpeaker, holding the bill in his hand, enquires if it ſhall paſs the houſe; if agreed to, the clerk writes on the bill *Soit baillé aux ſeigneurs*, or if in the houſe of lords, there is written, *Soit baillé aux communes*. If the bill be rejected, it cannot be again moved during that ſeſſion; and it is an uſual mode to move that the bill be read in three months, when by exceeding the limits of the ſeſſion, it amounts to a leſs invidious rejection. An advantage of the committee of the whole houſe is, that the members may anſwer and reply; whereas in the conſtituted ſenate no member can ſpeak twice, except in explanation. A ſilent vote in the houſe of commons, is given by *aye* and *no*; in the houſe of lords by *content* and *not content*.

The proceedings in the houſe of lords are nearly ſimilar; and if a difficulty ariſe, a conference is demanded, in an appropriated chamber, where it is debated; and either compromiſed, or the bill abandoned. When a bill has paſſed both houſes, the king, either in perſon or by commiſſion, imparts his conſent, the clerk repeating to public bills,

Le

Le Roy le veut; if private, *ſoit fait comme il eſt deſiré.* The denial of the royal concurrence uſed to be *Le Roy s'aviſera.* GOVERNMENT.

The attention of the nation is chiefly bent upon the parliament, when grand political queſtions ariſe concerning war and peace, or affecting the conſtitutional liberties of the land. On ſuch occaſions the utmoſt powers of eloquence are exerted; and ſpecimens produced worthy of Greece or Rome. Such trials of elocution may either ariſe in the ſtages of a bill as before deſcribed; or by the ſpecial motion of a member for ſome particular object, or addreſs to the throne.

Adjournments may frequently happen in one ſeſſion, and the buſineſs is continued and reſumed; but a prorogation terminates the ſeſſion, and the bills not then paſſed muſt recommence their whole progreſs. By a modern ſtatute, the death of the king does not, as formerly, terminate the parliament; which, on the contrary, had it been previouſly diſſolved, may, on that event, reſume its functions.

The forms of the houſe of commons are obſerved with great punctuality, and it is the ſpecial duty of the ſpeaker to ſuperintend their enforcement; a precaution indiſpenſible in a popular aſſembly, as we may judge by having ſeen the ſenate of a neighbouring nation occaſionally degenerate into a bear-garden. The houſe of commons is deſervedly eſteemed the very palladium of Engliſh liberty: they hold what is called the omnipotence of parliament, and if that power were not guided by principle, the ruin would be univerſal. Not the general execration of the human race, not the infamy eternized by the hiſtoric page, could ever avenge the injury done to their country; if inſtead of protecting the lives, properties, and liberties of the nation, by whom they are choſen for that ſole purpoſe, they ſhould, for the ſake of periſhable wealth or honours, become the betrayers of their brethren, and the ſycophants of deſpotiſm, of whatever kind or deſcription.

Such are the three grand component parts of the Engliſh conſtitution; but, perhaps, its moſt beneficial and popular effects, ariſe from the mode of adminiſtering juſtice, and other ramifications. For the ſake of connection, however, it is proper firſt to conſider the Privy Council, and the other diviſions of the government.

Under

GOVERNMENT.

Privy Council.

Under whatever form of monarchy, Privy Councils are found to be coeval with the ſtate. It is impoſſible for one man, however tranſcendent his abilities, to manage the various buſineſs of the government. In the moſt barbarous periods, a few men of eminent birth or wiſdom have been ſelected by the ſovereign for his aſſiſtants. While the national aſſembly only met on ſolemn occaſions, the advice of the privy council was ready on every emergency, and it hence became the chief engine of regular and continual authority. In England the powers of the privy council continue to be very extenſive, even in modern times. At more ancient periods it acted in a high juridical capacity, was wont to be conſulted, even by the judges, in decrees of great conſequence, and the parliament uſed to tranſmit ſeveral important topics to its ſole conſideration [4]. At preſent it is chiefly employed in deliberations on affairs of ſudden emergence; on peace and war; and ſpecial provinces of the royal prerogative. The members are choſen by the king; and on changes of adminiſtration are ſeldom eraſed, though the members in oppoſition never attend. They are ſtyled Right Honourable, and are ſworn to obſerve ſecrecy: the loweſt at the board pronounces his opinion firſt, and the king, if preſent, concludes with declaring his judgment. A privy council is ſeldom or never held, without the preſence of at leaſt one of the ſecretaries of ſtate; who, till the reign of Elizabeth, uſed to ſtand by the royal chair, but have ſince ſitten at the board as privy counſellors. Their office is of the higheſt truſt and importance, and is at preſent divided into three departments. Dependent on the ſecretaries of ſtate is the ſtate-paper office at Whitehall, which has in charge the writings of ſtate and council, diſpatches, negociations, and the like, from ancient times, thus preſenting moſt important documents of hiſtory.

Miniſtry.

Even at an early period, when the monarch maintained in his own hands a great ſhare of the adminiſtration of juſtice, and of the actual exerciſe of authority, there were intervals of abſence or recreation, in which he delegated the chief management of buſineſs to ſome ſelect perſon, uſually an eccleſiaſtic, whoſe cultivated talents qualified him for ſuch an important truſt. To lend more weight to this ſubſtitute, he was com-

[4] Chamberl. 83, and Blackſtone B. I. c. v.

monly

monly appointed chancellor, or chief adminiſtrator of civil juſtice, was preſident of the houſe of peers, and ſupported the royal influence in that great aſſembly. But in later times, when the management of the houſe of commons became the chief object of the crown, the chancellor of the court of exchequer, as ſuperintendant of the public revenue, is the officer generally conſidered as prime miniſter. The diſtribution of fifty millions a-year, joined with the royal ſupport, has recently carried his power to the higheſt elevation. Next to him in authority are the ſecretaries of ſtate, who are followed by the chancellor, the treaſurer of the navy, the preſident of the council, the paymaſter of the forces, the commiſſioners of the treaſury, and other perſons of high truſt. GOVERNMENT.

The judicature of England is worthy of the higheſt applauſe, with regard to preciſion and purity. It is, indeed, to be regretted that the vaſt number and confuſion of the ſtatutes, render the ſtudy of the laws peculiarly difficult, and that the number of officers and retainers on the courts of juſtice, ſwells the expences of a ſuit to an enormous ſum. But hardly can a country be named on the face of the globe, in which juſtice, civil or criminal, is adminiſtered with more integrity; bribes, ſo frequent in other countries, are totally unknown; and the ſaving of this expence muſt be candidly poiſed againſt other legal diſburſements. Judicature.

The trial by jury is another glorious feature of Engliſh juriſprudence, handed down from the Saxon times, and is juſtly regarded as the very ſafeguard of the lives, liberties, and properties of the nation. Its excellence has been reſpected by the Daniſh and Norman conquerors; and, it is hoped, will be venerated by the lateſt poſterity.

The laws of England in general, form a noble code of juſtice and equity, the precious legacy of remote anceſtors. The ſtream iſſued pure and ſalutary from the Saxon rock; and neither foreign ſources, nor ravaging floods, have been able to contaminate its beneficial qualities. Engliſh juriſprudence regards the civil code as a relic of deſpotiſm; and rarely liſtens to the papal voice of the canon law. It would be idle and extraneous here to attempt, even a brief ſketch of the laws of England. The moſt ſingular uſages are what was termed *Borough* Laws.

Government. *Engliſh*, by which the youngeſt ſon, or in defect of iſſue, the youngeſt brother was to enjoy the heritage; as it was to be preſumed that his elder brethren had learned their father's buſineſs [5]. That of *Gavel-kind* is ſcarcely known, except in Kent, and has three branches; the heirs male ſhare all the land alike; each heir may ſell or alienate at the age of fifteen; and though the father be attainted of treaſon, the inheritance paſſes to the progeny [6]. In no country are wills ſo much venerated by law: that of Mr. Theluſſon furniſhes a recent example.

Jury. All trials, upon common and ſtatute law, are determined by a jury of twelve, choſen as unobjectionable, from a larger number ſummoned by the ſheriff. They have their ſtation in the court, near the judges; and when the examination of the witneſſes, and the pleadings are ended, a judge recapitulates the whole evidence and arguments, and ſtate the law: after which the jury retire, for a ſhorter or longer ſpace, as doubts may ariſe. Upon their return, their foreman declares the verdict, which muſt be unanimous. The neceſſity of unanimity, has occaſioned many difficulties; and it ſeems preferable to decide by the mere majority, as is done in Scotland in criminal caſes. The foreſt and by-laws may here be omitted; but a more vigorous branch of Engliſh judicature muſt not be forgotten. Martial Law, or the *Lex Caſtrenſis Anglicana*, may be clearly traced to the reign of Henry V, who iſſued a code of military ſtatutes, publiſhed by Upton and Groſe. The ſtatutes chiefly relate to ſacrilege, priſoners, robbery of merchants, &c. &c. and refer ſolely to the actual exerciſe of war: the pain of death rarely occurs, except in the caſe of any perſon who cries *havoc*, an expreſſion ſeemingly equivalent to "no quarter." Martial law may be proclaimed by the king, regent, or lieutenant general of the kingdom; and even in time of peace, though the prerogative be rarely employed, except during war. It is in fact a dictatorial power, never exerted except on great emergencies. The trials are ſummary and ſevere, as the neceſſity of the caſe authoriſes.

Martial Law.

Courts of Juſtice. In a ſhort view of our courts of law, the next in dignity to the houſe of lords is the court of king's bench, ſo called becauſe the ſovereign was underſtood to judge in perſon, and its juriſdiction of courſe

[5] Chamberl. v. i. 188. [6] Ibid. 17.

extends

extends to the whole kingdom. The preſiding judge is denominated Lord Chief Juſtice of England. Here are chiefly determined what are called pleas of the crown; and appeals lie from ſeveral other courts. The court of chancery judges cauſes in equity, to moderate the rigour of the law, and defend the helpleſs from oppreſſion, and eſpecially to extend relief in three caſes, fraud, accident, and breach of truſt. The chancellor himſelf is the ſupreme judge. The maſter of the rolls, or keeper of the important papers enrolled in chancery, is an officer of great dignity, and conſiderable patronage. The office of the rolls contains the charters, &c. granted by Richard III, and his ſucceſſors; thoſe of more remote antiquity being lodged in the Tower. The court of common pleas judges, as the name imports, of the common ſuits between ſubject and ſubject; and tries all civil cauſes, real, perſonal, or mingled, according to the preciſe precepts of the law. The court of exchequer, ſo termed from the ancient mode of accounting upon a checquered board, decides all cauſes relating to the royal treaſury or revenue. The lord treaſurer, and the chancellor of the exchequer, may be regarded as honorary preſidents, while the firſt actual judge is the lord chief baron. Three other judges, and many officers, belong to this high court. There is alſo a court for the duchy of Lancaſter, having recognizance of the revenues of that duchy, annexed to the crown by Henry IV [7]. GOVERNMENT.

For the more commodious and general diſtribution of juſtice, the kingdom is divided into ſix circuits, which are viſited by the judges in the ſpring and autumn, when they ſit and determine all cauſes of importance, civil and criminal; a method much to be preferred to the ſedentary parliaments of France, in which the judges were biaſſed by local attachments. In the meanwhile more minute caſes are determined by the juſtices of the peace, who may be traced to the fourth year of Edward III. Their office is chiefly to commit criminals to priſon, and to inſpect the execution of ſome particular laws, relating to the poor, high-ways, and the like. They have a commiſſion under the great ſeal, and the moſt reſpectable are ſtyled juſtices of the quorum, from the words in the commiſſion, *Quorum* A. B. *unum eſſe volumus*. The *cuſtos* Circuits. Juſtices of Peace.

[7] Blackſtone, b. iii. c. 4.

Government. *rotulorum*, or keeper of the rolls, produces them at the quarter ſeſſions, where the juſtices meet once in three months: the grand inqueſt, or jury of the county, is here ſummoned, which enquires concerning crimes, and orders the guilty to jail till the next circuit or aſſizes.

Sheriffs. The office of ſheriff, or præfect of the county, is to execute the royal mandates, to impannel juries, to bring perſons to trial, and to ſee the ſentences executed, to collect fines, and remit them to the exchequer, and to preſerve the tranquillity of the ſhire. On the circuits he meets and attends the judges, with a gallant train of officers and ſervants. The ſheriffs are annually pricked with a golden needle, by the king out of a liſt of ſix gentlemen of the county, drawn up by the itinerant judges.

Anciently there was a bailiff in every hundred, but the office is now rare, or fallen into diſuſe. The conſtables perſonally aſſiſt in the preſervation of the peace, and execute the warrants of the juſtices. The coroner was originally a man of high rank, who ſhared the power of the ſheriffs, particularly in what regarded the pleas of the crown; at preſent his duty is to enquire, by a jury of neighbours, into caſes of violent death. The clerk of the market ſuperintends the weights and meaſures, and it were to be wiſhed, for the benefit of the poor, that the office were multiplied, and ſtrictly enforced.

Such are the chief magiſtrates in the country. Cities and towns are generally ruled by a mayor and aldermen, or by ſimilar officers, under different appellations, whoſe juridical power little exceeds that of the juſtices of peace. If a town ſend members to parliament, it is denominated a borough. The villages are chiefly under the authority of the lord of the manor, who holds courts, and retains many relics of feudal juriſdiction. and, in the words of a well-informed writer, "Every "little village hath almoſt an epitome of monarchical government; of "civil and eccleſiaſtical polity within itſelf; which, if duly retained, "would render us a very happy people[s]."

To enumerate the various puniſhments inflicted by the laws of England, would be an unneceſſary taſk. It has been juſtly obſerved

[s] Chamberl. 129.

that

that they are too ſanguinary, and that their frequency diminiſhes the intended purpoſe of impreſſing terror. If death were only inflicted in caſes of murder, the relaxation would be found beneficial to the community. As man is an animal reared with conſiderable difficulty, and may generally be rendered uſeful, it would certainly be preferable to ſend criminals for life to the new and diſtant Aſiatic ſettlements, than, by the waſte of blood to leſſen ſtrength and population. GOVERNMENT.

The population of England has generally been eſtimated at eight millions; but ſome writers raiſe it to a greater amount. That of the capital alone has been ſwelled to a million, though reduced by more preciſe calculations to about ſeven hundred thouſand *. It is to be hoped that the ſurveys of the ſeveral counties, commenced by the board of agriculture, and the recent parliamentary enquiries, will ſpeedily beſtow more preciſion upon the ſtatiſtic economy of the country. Sufficient materials do not yet ariſe for exact enumeration of the various claſſes of inhabitants, a moſt important barometer of the political ſtate †. Population.

To

* See Middleton's Middleſex, p. 451.

† Towards the beginning of the laſt century, Gregory King, an able political calculator, drew up the following table of the ranks of perſons in England. It muſt be premiſed, that he has followed an exceptionable mode, in including the domeſtics in the families of each rank, whereas male and female ſervants ought to have formed a claſs apart.

Ranks.	Number of Families.	Heads in each.	Number of Perſons.
Spiritual Lords	26	20	520
Temporal Lords	160	40	6,400
Knights	600	13	7,800
Baronets	800	16	12,800
Eminent clergymen	2,000	6	12,000
Eminent merchants	2,000	8	16,000
Eſquires	3,000	10	30,000
Gentlemen	12,000	8	96,000
Military officers	4,000	4	16,000
Naval officers	5,000	4	20,000
Perſons in leſſer offices	5,000	6	30,000
Perſons in higher offices	5,000	8	40,000
Leſſer clergymen	8,000	5	40 000
Leſſer merchants	8,000	6	48,000
		Carried over	375,500

Perſons

Population. Colonies.

To the enumeration of the inhabitants of England, may be added many exterior colonies and ſettlements, the moſt important of which are now in Aſia; but as the climate of Hindoſtan is rather adverſe to European conſtitutions, it may be doubted whether our ſettlements there, though containing a conſiderable population, can be conſidered as permanent colonies. The natives ſubject to Great Britain cannot be now calculated at leſs than forty millions, in itſelf an empire. The acquiſition of the Dutch ſettlements, the colony of New Holland, and more minute ſtations muſt alſo be taken into the account. In America, and what is called the Weſt Indies; Canada, Nova Scotia, Newfoundland, and the more northern ſettlements, with Jamaica, and the other iſlands, may perhaps contain a million. In Africa, the Settlements, at the Cape of Good Hope, the Iſland of St. Helena, and at Sierra Leone, preſent an inſignificant number, and Gibraltar is rather to be regarded as a military ſtation. If we compute the North Ame-

Ranks.	Number of Families.	Heads in each.	Number of Perſons.
Brought forward -	-	-	375,500
Perſons in the law - -	10,000	- 7	- 70,000
Perſons of the liberal arts -	15,000	- 5	- 75,000
Freeholders of the better ſort -	40,000	- 7	- 280,000
Shopkeepers and tradeſmen -	50,000	- 4½	- 225,000
Artizans - -	60,000	- 4	- 240,000
Freeholders of the leſſer ſort -	120,000	- 5½	- 660,000
Farmers - - -	150,000	- 5	- 750,000
Gipſies, thieves, beggars, &c. -	—	- —	- 30,000
Common ſoldiers - -	35,000	- 2	- 70,000
Common ſailors - -	50,000	- 3½	- 150,000
Labourers and out-ſervants -	564,000	- 3	- 1,274,000
Cottagers and paupers - -	400,000	- 3	- 1,300,000
			5,499,520

It is now ſuppoſed that near 1,600,000 perſons are employed in manufactures, and Mr. Young (Northern Tour, vol. iv. p. 364.) computes that 2,800,000 are occupied in farming. The number of domeſtics allowed by King, might be in part computed, by reducing the ſuperior families to four. The number of paupers and beggars, who, in fact, detract from the national ſtrength, can now ſcarcely be ſuppoſed leſs than a million. The ſailors and ſoldiers amount to about 400,000. The ſhopkeepers are perhaps triple. With theſe additions, &c. it would be eaſy to ſwell the liſt to our preſent ſuppoſed population of eight millions. The reader may alſo conſult Mr. Grellier's table of the productive and unproductive claſſes, in the Monthly Magazine, vol. x. p. 27; but as he eſtimates the population of England at only five millions and a half, his aſſumptions cannot be entirely credited, while ſome late writers, on the contrary, increaſe the population of England alone to eleven millions!

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rican States, detached from the mother country, at a population of five millions, England at ſeven, Scotland at two, Ireland three, and our colonies and ſettlements at two millions, we ſhall find in the various regions of the globe an increaſing population of nineteen or twenty millions, diffuſing the Engliſh language and manners to a vaſt extent. POPULATION.

The army of England has latterly engroſſed a conſiderable ſhare of the population. It is eſtimated in regulars at 41 regiments of cavalry, and 144 of infantry, while the fencibles form 45 regiments, and the militia 86, excluſive of artillery and engineers[1]. The *effective* rank and file, including invalids, militia, and foreign corps, as well as the regular and fencible troops, was returned to the ſecretary of war, in December, 1800, as amounting to 168,082. The volunteer corps in Great Britain and Ireland, may probably amount to 60,000 effective men[2]. ARMY.

But the great rampart, and ſupreme glory of Great Britain, conſiſt in her navy; in ſize, ſtrength, and number of ſhips, far exceeding any examples on record. If abundance of documents did not exiſt, the following genuine liſt would ſcarcely be credited by poſterity. NAVY.

Statement of the Diſtribution of the Britiſh Naval Force, excluſive of the hired armed Veſſels, which are chiefly employed in protecting the Coaſting Trade of Great Britain. Navy Liſt, Jan. 1801.

	Line.	Fifties.	Frigates	Ships, &c.	Total.
In Port and fitting	27	7	46	98	178
Guard Ships	4	0	1	0	5
In the Engliſh and Iriſh Channels	33	1	26	45	105
In the Downs and North Seas	9	1	17	36	63
At the Weſt India Iſlands, and on the paſſage	1	0	21	24	46
At Jamaica	5	1	22	12	40
In America, and at Newfoundland	2	0	4	5	11
Cape of Good Hope, Eaſt Indies, and on the paſſage.	10	8	20	19	57
Coaſt of Africa	0	0	1	3	4
Coaſt of Portugal, Gibraltar, and Mediterranean	16	2	53	28	99
Hoſpital and Priſon Ships	16	1	1	0	15
Total in Commiſſion	123	21	212	270	626
Receiving Ships	9	1	7	0	17
Serviceable, and repairing for ſervice	2	0	1	0	3
In ordinary	44	3	23	44	114
Building	17	2	8	0	27
Total	195	27	251	314	787

[1] Army Liſt, Jan. 1801.

[2] So the daily papers, yet by the ſame authority, the ſecretary of war, on the 16th Feb. 1801, computed the regulars at 193,187; militia, 78,040; fencibles 31,415; in all, 302,642. The expence near thirteen millions! This computation, though including Ireland, ſeems exaggerated.

To

Population, &c.

To this may be ſubjoined the liſt of captures from the ſeveral hoſtile powers, from the commencement of the war, to January 1801, after premiſing that many of them were already included in the above ſtate of the navy:

	Line.	Fifties.	Frigates.	Sloops, &c.	Total.
French -	54	2	137	145	338
Spaniſh -	8	0	14	31	53
Dutch -	17	8	32	32	89
	79	10	183	208	480
Privateers of all nations	-	-	-		832
			Grand total -		1312

For this immenſe fleet, the number of ſeamen annually voted, amounts from a hundred to a hundred and twenty thouſand; a number almoſt incredible, and which no other country, ancient or modern, could have ſupplied. In China, indeed, half of the inhabitants may be ſaid to live on the water, but in ſkill, ſpirit, and enterprize, are far inferior to Britiſh ſeamen.

Naval Power.

The naval power of Great Britain, conſtitutes ſo ſtriking and important a feature in the national portrait, that it merits particular illuſtration. Even in the Saxon times we find conſiderable fleets mentioned of the ſmall veſſels then in uſe. One of the Northumbrian monarchs aſſembled a numerous fleet near Jarro, the monaſtery of Beda, in an extenſive haven of the time, now become a ſalt marſh. About the year 882, we find that Alfred directed a powerful fleet againſt the Daniſh invaders[3]; but it is to be regretted that the early writers have not been more particular with regard to the number and form of the veſſels. The fleet of Edgar is alſo celebrated; but the author of the Saxon Chronicle aſſures us, that the armament of Ethelred II, in the year 1009, exceeded any which England had ever before beheld; and as William of Malmeſbury computes that of Edgar at four hundred veſſels, this may probably have amounted to five hundred of the ſmall ſhips then known. But the devaſtations of the Danes and Normans occaſioned ſuch a decline in the naval power of England, that Richard I.

[3] See Aſſer Vita Alf. St. Croix, Hiſt. de la puiſance navale de l'Angleterre, Paris 1786, 2 vols. 8vo.

was obliged to have recourſe to foreign veſſels for his cruſade. In the reign of John we, for the firſt time, find commemorated a ſignal victory of the Engliſh and Flemings, over the French fleet of Philip Auguſtus, which was computed at ſeventeen hundred ſhips, or rather boats [2]. The Engliſh monarch John, inſolent in proſperity, mean in adverſity, in the pride of his triumph, was the firſt who ordered the SALUTE to be paid by foreign veſſels to the national flag. The fleet of England thenceforth continued to be always reſpectable, and generally victorious. In the reign of Edward III, it had acquired ſuch pre-eminence, that in his gold coin, the firſt ſtruck in England, he appears in a ſhip, the ſymbol of commerce and maritime power; but the preponderance of the Engliſh armaments, over thoſe of France, only became permanent and deciſive, a little more than a century ago, after the battle of La Hogue. Spain had yielded the conteſt ſince the deſtruction of her great armada; and Holland had been greatly reduced in the naval conflicts under Charles II, ſo that no other rival remained, and Great Britain maintains a fixed ſuperiority over the ocean. In the mechaniſm of ſhips, the French builders certainly excel; but, in the ſoul of ſhips, ſpirited, alert, and ſkilful ſeamen, no country can pretend to vie with Great Britain. The progreſs in number of veſſels has been more rapid in this reign, than at any former period, as may appear from the comparative ſtatement in the note, which includes every military veſſel, from the firſt rate to the frigate [3].

NAVAL POWER.

The ſpecial ſuperintendance of the navy, is committed to the board of admiralty, compoſed of admirals of known ſkill, and of peers, whoſe impartiality generally regards merit alone in this important ſervice.

[2] Near Dam, in Flanders, A. D. 1213. Damme, now inland, a league N. E. of Bruges, was formerly a maritime town, and the ſea waſhed its walls. Guicc. Differ. Belg.

[3] Under James II. - - 173
William III. - - 273
Anne - - - 284
George I, in 1721 - - 206
George II, in 1734 - - 208
1746 - - 276
1755 - - 241
George III, 1762 - - 343
1801 - - 787

Naval Power.

The recent conduct of maritime war, has been crowned with diſtinguiſhed ſucceſs; and whilſt the admirals muſt be allowed to rival any names in naval hiſtory, ancient or modern, the fame of Spencer has become as dear to patriotiſm as to literature.

Before the revolution, the impreſſing of men was legal, even for the land ſervice; and in more early times, many forms of requiſition were uſual, workmen were impreſſed to build royal caſtles, artiſts for their decoration, and even ſinging boys for the chapel. Amidſt a wide diffuſion of liberty, and that individual ſecurity which is the moſt home-felt bleſſing of our conſtitution, it has been found impoſſible to abandon the impreſſing of ſeamen. The army naturally ſupports itſelf, for war, by producing a ſtagnation of manufactures, raiſes a ſupply of ſoldiers; but the ſeamen muſt be trained and inured to their peculiar element and profeſſion; and the ſervice being abſolutely indiſpenſable, it becomes a meaſure of political neceſſity to enforce it, if not offered voluntarily. This unavoidable additional hardſhip upon a claſs of men, ſubject to ſo many toils and deprivations, is deeply to be regretted; and every endeavour ſhould in juſtice be exerted, to render their ſituation as comfortable as poſſible, and to impart to them a ſhare of the national opulence, which their vigour ſo zealouſly protects.

Revenue.

In ancient times, the royal revenue chiefly aroſe from the domains or lands appropriated to the crown; from amerciaments civil and criminal, which paſſed to the fiſc, or treaſury; and from cuſtoms on goods imported and exported. As in war each ſoldier was obliged to maintain himſelf for a certain time, the expenditure was not much increaſed. Upon extraordinary emergencies, it appears that a contribution was raiſed by the conſent of the national council. In later periods, ſubſidies were granted to the amount of a fifteenth, or a tenth, on the landed income, and a proportionable rate on moveable goods. As ſociety advanced, taxes began to be impoſed on the materials themſelves; and from a ſmall plant an enormous tree has ariſen, with a labyrinth of roots, which, in the opinion of ſome politicians, undermine the iſland, while others believe that they only produce a more firm conſolidation.

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The exciſe forms one of the moſt productive branches of the revenue, amounting to between ſeven and eight millions. Next ſtand the cuſtoms, which produce about half that ſum. The ſtamps and incidental taxes, as they are termed, ariſe to near three millions. The land tax has been recently rendered perpetual, and ſold to the proprietors of eſtates, and other individuals, a meaſure which has had a favourable effect in raiſing the price of ſtocks. But inſtead of the land tax, now appear thoſe on ſugar, tobacco, and malt, amounting to 2,750,000*l.*; other ſupplies ariſe from the Eaſt India Company, lotteries, &c. In addition to all theſe, the income tax is ſuppoſed to yield 7,500,000*l.*, and if rendered perpetual, might ſwell the permanent revenue to 25 or 26,000,000*l.* But, in the year 1799, it was ſuppoſed that the additional ſums raiſed by loans, &c. ſwelled the national expenditure to near 60,000,000*l.* ſterling *. REVENUES.

Of the permanent taxes, the greater part is employed in diſcharging the intereſt of the national debt, which, after the American war, amounted to more than 239,000,000*l.* while the intereſt exceeded 9,000,000*l* †. At preſent the national debt is about 480,000,000*l.* and the intereſt about 19,000,000*l.* To alleviate this growing burthen, a ſinking fund was inſtituted in 1786, by which between 20 and 30,000,000*l.* may be conſidered as already redeemed.

The national debt began in the reign of William, and grew into what have been called the funds, or ſtocks, only ſynonymous terms for the public debt ‡.

The taxes have not only increaſed the expence of every article of life, but have of courſe ſo enormouſly ſwelled the diſburſements of war, that perhaps in a ſhort time it may become too dear a game, even for princes. During peace the national expences are greatly reduced.

* For 1801, the miniſter computed it at 42,268,000*l.*; but the real amount was not capable of being foreſeen.

† In 1790, the national debt was 247,981,927*l.*; the intereſt and charges of management, 9 469,117*l.*

‡ See Mortimer on the ſtocks, where the reader will find a curious account of ſtock-jobbing, or buying againſt time, a ſpecies of gambling. In public loans, ib. 172, the engager commonly gains 10 per cent. while the laws againſt uſury are only put in force in private tranſactions. Hence new loans are greedily filled.

Revenues. The civil liſt, from which are defrayed the ſalaries of officers of ſtate, judges, ambaſſadors, &c. together with the expences of the royal family, amounts to about 1,000,000*l.* annually.

Political Importance, and Relations. With ſuch a prodigious command of national treaſure, the political importance and relations of Great Britain, may be ſaid to be diffuſed over the world, for wherever money influences man, there may her power be perceived. The union of Scotland with England, delivered the latter country from the perpetual check, exerciſed by politicians, ancient and modern, that of exciting an enemy from behind, and thereby dividing the power of an antagoniſt. That with Ireland, if preſerved by wiſe and lenient meaſures, muſt alſo impart additional energy. The moſt important political conſiderations, are thoſe between Great Britain and France. It ſeems hardly reconcileable to humanity, or to any idea of divine benevolence, to ſtyle any country the natural enemy of another: but human affairs, alas, are ſeldom conducted with pure benevolence and humanity, and cannot poſſibly be, till all nations become benevolent and humane. If France muſt not be ſtyled the natural enemy of Great Britain, ſhe has, for many centuries, been a conſtant and jealous rival; eagerly embracing every opportunity to leſſen Britiſh proſperity and power; an impulſe which will probably continue till all men ſhall become philoſophers; or, in other words, ſhall be ruled by the maxims of univerſal reaſon; a perfection too viſionary to be expected, as man, in all ages and climates, and under whatever forms of government, has ever been found to be chiefly influenced by his habits and paſſions. Such being the caſe, it has ever been regarded as the political intereſt of England, to balance and divide the enmity of France, by a ſtrict alliance with ſome limitaneous ſtate. In this point of view even Savoy has been found uſeful, though its power be only adequate to a ſlight diverſion. Nor are the German ſtates bordering on France, Swabia, and the two Circles of the Rhine, nor even Switzerland itſelf, capable of much exertion. Hence it might ſeem that ſound policy would dictate as complete a conſolidation of German power, as could be effected, in order to give a decided and vigorous check to that of France from behind. The poſſeſſion of the Netherlands by the powerful Houſe of Auſtria,

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was certainly of great moment to the ſafety of Great Britain, eſpecially ſince Spain and Holland have fallen into decline. The latter country preſents, however, a connection of ſuperlative importance to England, being her grand mart of trade with the Continent. Ruſſia, a moſt powerful monarchy, though once drawn into the vortex of the preſent grand commotion, is too remote to afford laſting aſſiſtance; but her amity is valuable in a commercial view, and as ſhe might, by no great ſtretch of oriental power, detach an army into Hindoſtan, and overturn our opulent poſſeſſions. An alliance with Pruſſia has ever been regarded as deſirable, though not of ſuch conſequence againſt France as that with Auſtria. The connection with Portugal has been enforced by mutual advantages of commercial intercourſe *; and by the family compact between France and Spain. As to Denmark and Sweden, their friendſhip or enmity is little momentous; but as Sweden has long maintained a ſtrict connection with France, it is moſt natural that Britain ſhould balance it, by cultivating that of Denmark.

POLITICAL IMPORTANCE AND RELATIONS.

Such ſeem to have been the leading ideas of political writers, concerning the chief relations to be maintained by the Britiſh empire.

* Firmly eſtabliſhed by the Methven treaty, 1703. Theſe conſiderations were written before the connection of Ruſſia, Sweden, Denmark, and Pruſſia, with France.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.—Language.—Literature.—The Arts.—Education.—Univerſities.—Cities and Towns.—Edifices.—Roads.—Inland Navigation.—Manufactures and Commerce.

Manners and Customs.

THE ſingularity of manners in England, has often excited the ſurprize of foreigners, and the attention of our own ethic writers, who have attempted to deduce the ſources from moral and phyſical cauſes; eſtimating as the firſt, the freedom diffuſed over the country, which permits the indulgence of individual inclination; and recurring for the latter, to the perpetual variations of the climate, producing effects of electric ſympathy on the animal ſpirits.

The conſideration of national manners may be conveniently referred to four diviſions: 1. Birth, marriage, death; 2. diet; 3. houſes and dreſs; 4. amuſements.

The ceremonies of baptiſm, marriage, and burial, admitting of few variations in moſt Chriſtian countries, it becomes unneceſſary to conſider that diviſion. The Engliſh are generally eſteemed to exceed in the uſe of animal food; but, after the recent importations of French emigrants of all claſſes, this poſition begins to be doubted. If ſtomachic diſeaſes be really more frequent than in other countries, they may more juſtly be aſcribed to our potations of heavy malt liquor, which deſervedly ſtrike foreigners as a ſingularity in Engliſh diet. Even our lighteſt liquors of that ſort have not eſcaped their remark; for a late French traveller has obſerved, that the Engliſh commonly drink at their meals a ſort of medical ptiſan, which they call *ſmall beer*. Our anceſtors prided themſelves in the variety and richneſs of their ales, and old writers enumerate many ſorts, as Cock, Stepney, Stitchback, Hull, Derby, Northdown, Nottingham, Sandbach, Betony, Scurvy-graſs, Sage-

Sage-ale, College-ale, China-ale, Butler's-ale, &c. [1], nor even at preſent do we refuſe praiſe to the various qualities of our Burton, Dorcheſter, Taunton, Scottiſh, and other ales. But the moſt peculiar malt beverage is porter, which ought to be ſolely compoſed of brown or high-dried malt, hops, liquorice, and ſugar, but is ſometimes debaſed by other ingredients: that of London is particularly famous, and is an article of exportation, being eſteemed a luxury on the banks of the Delaware and the Ganges. Punch was another national liquor, compoſed of ſpirits, water, acids, and ſugar, but its uſe is now in the decline, though the late Dr. Cullen eſteemed it a ſalutary potation, in a moiſt and variable climate. The prodigious conſumption of tea is another peculiar feature, the uſe of that plant being rare in other European countries; to phlegmatic conſtitutions it may be beneficial, but among the common claſſes, its enervating powers are often attempted to be corrected by the uſe of ſpirituous liquors. The latter bane has been long known in Ruſſia, and other northern kingdoms, but in the milder climes of Great Britain and Ireland, is deſtructive of the health and morals of the people. The legiſlature has been often forced to interpoſe to prevent the growth of drunkenneſs, wretchedneſs, and vice; and it is to be wiſhed, that a late committee of the houſe of commons had ſanctioned a motion that was made to reſtrict ſpirituous liquors to their ancient boundaries, the ſhops of the chymiſts. It was objected, that by private diſtillation and ſmuggling, the evil would continue, without yielding any revenue; but the prohibition muſt have made a deep and ſalutary impreſſion, and the contagion muſt have been reſtricted to far narrower bounds. In all events, it is the moral duty of the legiſlature to increaſe the price of ſpirits almoſt to prohibition, and to withdraw taxation from malt liquor, which ought to remain a ſtout and cordial beverage for the poor.

MANNERS AND CUSTOMS.

The ſimplicity of the Engliſh cookery, ſtrikes foreigners as much as that of the dreſs, which, even among the great, is very plain, except on the days of court gala. A Frenchman drinks his wine during dinner, but the late Mr. Gibbon has remarked [2], that the luxury of a daily table

[1] Chambeil. 191. [2] Poſth. Works.

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MANNERS AND CUSTOMS.

in England, permits a gentleman to taſte half a dozen ſorts of wine during dinner; and to drink his bottle of claret afterwards. The red wine of Portugal is, however, a greater favourite than that of France, as its aſtringent and antiſeptic qualities, are found highly ſalutary in a moiſt climate. A late French traveller [3] has remarked, that the Engliſh know not the proper uſe of coffee; but will ſwallow ſeveral cups of a brown water, inſtead of one cup of the real ſtrong coffee, drank in other countries.

The houſes in England are peculiarly commodious, neat, and cleanly; and domeſtic architecture, ſeems here arrived at its greateſt perfection. The dreſs, as has been before obſerved, is rather plain and neat, than ſplendid, a praiſe which alſo applies to that of the ladies, who have now abandoned the tight form ſo prejudicial to health, and have aſſumed much of the Grecian eaſe and elegance.

The amuſements of the theatre and of the field, and various games of ſkill or chance, are common to moſt nations. The baiting of bulls and bears is, it is believed, nearly diſcontinued; one of the moſt peculiar amuſements of the common people, is the ringing of long peals, with many changes, which deafen thoſe who are ſo unhappy as to live in the neighbourhood of the church.

Prior to the middle of the ſixteenth century, the Engliſh and French were regarded as barbarous nations by the more poliſhed Italians. The reign, and female blandiſhments of the court of Elizabeth, ſeem to have had a wonderful effect in civilizing the manners. The tranſition has been well pourtrayed by an ancient writer, whoſe ſimple language, given in modern orthography, may perhaps amuſe the reader.

" There are old men yet dwelling in the village where I remain, " who have noted three things that are marvelouſly altered in Eng- " land within their ſound remembrance. One is the multitude of " chimnies lately erected; whereas in their young days there were " not above two or three, if ſo many, in many uplandiſh towns of the " realm, (the religious houſes, and manor places of their lords, always " excepted, and peradventure ſome great perſonages,) but each one " made his fire againſt a *rere doſſe* in the hall, where he dined and

[3] St. Fond. Paſſim.

" dreſſed

" dreſſed his meat. The ſecond is the great amendment of lodging; " for, ſaid they, our fathers, and we ourſelves, have lain full oft upon " ſtraw pallets, covered only with a ſheet, under coverlets made of " *dagſwain* or *hopharlots*, (I uſe their own terms,) and a good round " log under their heads, inſtead of a bolſter. If it were ſo that our " fathers, or the good man of the houſe, had a mattraſs or flock bed, " and thereto a ſack of chaff to reſt his head upon, he thought himſelf " to be as well lodged as the lord of the town, ſo well were they con- " tented. Pillows, ſaid they, were thought meet only for women in " child-bed. As for ſervants, if they had any ſheet above them, it " was well, for ſeldom had they any under their bodies, to keep them " from the pricking ſtraws that ran through the canvas, and raiſed " their hardened hides.

" The third thing they tell of, is the exchange of wooden platters " into pewter, and wooden ſpoons into ſilver or tin. For ſo common " were all ſorts of wooden veſſels, in old time, that a man ſhould " hardly find four pieces of pewter, (of which one was peradventure " a ſalt-ſeller,) in a good farmer's houſe; and yet, for all this frugality, " if it may ſo be juſtly called, they were ſcarce able to live and pay " their rents at their days, without ſelling of a cow, or a horſe, or more, " although they paid but four pounds at the uttermoſt, by the year. " Such alſo was their poverty, that if a farmer, or huſbandman, had " been at the alehouſe, a thing greatly uſed in thoſe days, amongſt ſix " or ſeven of his neighbours, and there, in a bravery, to ſhew what " ſtore he had, did caſt down his purſe, and therein a noble, or ſix " ſhillings in ſilver, unto them, it is very likely that all the reſt would " not lay down ſo much againſt it; whereas, in my time, although " peradventure four pounds of old rent be improved to forty or fifty " pounds, yet will the farmer think his gains very ſmall, toward the " midſt of his term, if he have not ſix or ſeven years rent lying by him " therewith to purchaſe a new leaſe; beſides a fair garniſh of pewter " on his cupboard, three or four feather-beds, as many coverlids, and " carpets of tapeſtry, a ſilver ſalt-ſeller, a bowl for wine, if not a whole " neſt, and a dozen of ſpoons to furniſh up the ſuit. This alſo he " taketh to be his own clear; for what ſtock of money ſoever he ga-

Manners and Customs.

" thereth in all his years, it is often ſeen that the landlord will take ſuch " order with him for the ſame, when he reneweth his leaſe (which is " commonly eight or ten years before it be expired, ſince it is now " grown almoſt a cuſtom, that if he come not to his lord ſo long be- " fore, another ſhall ſtep in for a reverſion, and ſo defeat him outright,) " that it ſhall never trouble him more than the hair of his beard, when " the barber hath waſhed and ſhaven it from his chin[4]."

This remarkable change in the reign of Elizabeth, was carried, as uſual, to the oppoſite extreme; and the ſame author loudly execrates the contemporary luxury of attire. " I have met," ſays he, " with " ſome in London ſo diſguiſed, that it hath paſſed my ſkill to diſcern, " whether they were men or women." He adds, " neither was it ever " merrier with England, than when an Engliſhman was known by his " own cloth; and contented himſelf with his fine *carſie* hoſe, and a " mean ſlop (trowſers); his coat, gown, and cloak, of brown, blue, " or puce, with ſome pretty furniture of velvet or fur, and a doublet " of ſad-tawney, or black velvet, or comely ſilk; without ſuch gariſh " colours as are worn in theſe days, and never brought in but by the " conſent of the French, who think themſelves the gayeſt men, when " they have moſt diverſity and change of colours about them."

Under this diviſion of geography have been generally arranged what are called national characters, but which, in fact, are commonly monuments of prejudice and injuſtice, and particularly noxious to the minds of youth. It ſhall, therefore, only be remarked, that the cold reſtraint which ſome foreigners have aſcribed to the Engliſh, has been candidly judged by a recent voyager [5], to exiſt only in appearance. A more genuine attribute of the Engliſh is integrity, which has carried their credit and commerce to an extent before unknown in the hiſtory of nations.

Language.

Moſt European languages are derived from the Gothic or the Latin. To the Latin origin belong Italian, French, and Spaniſh; to the Gothic, the German, Dutch, Flemiſh, Daniſh, Swediſh, and Norwegian. From the ſituation of the country, and other cauſes, the Engliſh participates of

[4] Deſcription of Britain, in Holinſhed's Chronicle, vol. i. fol. 85.

[5] St. Fond, tom. i. p. 61.

both

both thoſe grand ſources; and unites in ſome degree the force of the Gothic with the melody of the Latin dialects. The ancient ground, and native expreſſion, originate from the Gothic diviſions of the Belgic, Saxon and Daniſh; but particularly from the Belgic, as will appear from compariſon with the Dutch and Friſic. The languages of Latin origin, have, however, ſupplied a vaſt wealth of words, ſometimes neceſſary, ſometimes only adopted becauſe they are more ſonorous, though not ſo emphatic as the original Gothic. There is no evidence of the exiſtence of Celtic words in our language, whatever ſome antiquaries have imagined, for the words they indicate may alſo be found in Iceland, a country never peopled by the Celts.

Numerous manuſcripts exiſt, written in the Anglo-Saxon, or Old Engliſh language, and one of its moſt claſſic authors, is the great Alfred himſelf. It appears from many works, written long after the conqueſt, that the French language, though colloquial among the great, ſcarcely imparted any tinge to the national tongue. The conqueſts of Edward III, in France, and other circumſtances not proper to be here diſcuſſed, effected in the fourteenth century, a change in vain attempted by the Norman conqueror. Chaucer, who wrote at that period, preſents almoſt the firſt rude dawn of what may be termed the Engliſh language. In the ſame century, that enterpriſing traveller, Sir John Mandeville, ſupplies one of the firſt ſpecimens of Engliſh proſe: as he was a man of ſome ſcience for that time, has interſperſed ſeveral words of Latin origin; and his book was much adapted to public curioſity, he may with ſome juſtice be regarded in the new light of a father of the Engliſh language. Gower, the poet, rather preceded Chaucer; and ſerves to evince, that Chaucer did not introduce any innovations, but, as may well be ſuppoſed, wrote in the language of his time.

In the ſucceeding century, the ſpeech had made ſuch rapid advances, that even as early as the reign of Henry VI, we find it vary very little from that of the reign of Henry VIII. There are papers preſerved by Rymer and others, written in the reign of Henry VI, and compoſed with a force and preciſion which may appear ſurpriſing. The works of Forteſcue, in the following reign of Edward IV, are not only

Language. dictated by excellent ſenſe; but, ſetting aſide the orthography, might even be peruſed by the common reader.

In the reign of Elizabeth, a century after, the Engliſh language had acquired ſuch copiouſneſs, dignity, force, and melody, that, perhaps, in the eye of very diſtant poſterity, moderns may be ſuppoſed never to have exceeded; what is gained in elegance, being generally loſt in power. Sydney's defence of poeſy, may be regarded as a good ſpecimen of Engliſh proſe; not to mention Hooker's Eccleſiaſtical Polity, and other large works of that period, which continue to be read and admired. The common tranſlation of the Bible, is a noble ſpecimen of the dignified proſe of the following reign; beyond which it is unneceſſary to conduct this ſketch, as our libraries abound with the ſucceeding publications.

The conſtruction of the Engliſh language is peculiar, and renders the ſtudy of it very difficult to foreigners. The German, and other Gothic dialects, preſent declenſions of nouns, and other correſpondencies with the Latin; while in the Engliſh all ſuch objects are accompliſhed by prefixes. Anomalies alſo abound, and are too deeply rooted, ever to be eradicated by grammatical rules. Further remarks would be foreign to the plan of this work, which however requires occaſionally ſhort ſpecimens of the various languages of the globe, to enable the reader to judge of the relative origins of nations: for this purpoſe the Lord's Prayer is generally choſen, which ſhall here be given in Anglo-Saxon, and in modern Engliſh.

Uren fader thic arth in Heofnas. Sie gehalgud thin noma. To cymeth thin Ryc. Sie thin willa, ſue is in Heofnas and in eortho. Uren hlaf oferwiſtlic ſel us to daeg. And forgeve us ſcylda urna ſue we forgefan ſcyldgum urum. And no inlead uſig in cuſtnung. Ah gefrig uſich from ifle. Amen.

Our father which art in heaven, hallowed be thy name; thy kingdom come; thy will be done on earth as it is in heaven; give us this day our daily bread, and forgive us our debts as we forgive our debtors; and lead us not into temptation, but deliver us from evil. Amen.

Literature Engliſh literature is a vaſt and inviting theme, but a few fugitive remarks muſt here ſuffice. Of the traditionary verſes of the Druids, no relic probably exiſts; and the Roman conqueſt does not appear to have inculcated letters with much diffuſion, for while we have claſſical writers

writers of almoſt every other European kingdom, ſubdued by that great nation, of France, Spain, and even of Africa; no author of thoſe periods claims a Britiſh origin. The country was ſeized by the Saxons before Britiſh literature faintly dawned in Gildas, A. D. 560. Iriſh literature commences about the ſame period, and continued for ſome centuries, to ſupply numerous writers in the Latin language, while England remained almoſt deſtitute. But Beda, in the eighth century, redeemed this defect, in himſelf a hoſt, and like Chaucer, the wonder of his time. The Daniſh invaſions were ruinous to literature, both in Great Britain and Ireland, and the great Alfred was obliged to exert his utmoſt endeavours, in order to reſtore ſome degree of learning, even among the clergy. That admirable prince did not aſpire to Latin compoſition, but tranſlated ſome works of merit and utility, as the hiſtories of Oroſius and Beda, into the Anglo-Saxon. Aſſerius is perhaps the only Latin writer, who can be named between the age of Bede and the year 1100, if we except a few lives of ſaints: but the Saxon Chronicle is a noble and neglected monument of this interval, which being the only civil Hiſtory of England, for a ſpace of 400 years, ought to be carefully collated with all the manuſcripts, and publiſhed with all the ſplendour of typography. About the year 1100, Engliſh literature commences a firm and ſteady pace. A numerous train of hiſtorians, poets, and other writers, fills the pages of biography. In the fourteenth century, Roger Bacon aſpires even to the praiſe of eminent genius. In the following century, the civil wars between the houſes of York and Lancaſter, were deſtructive of literature and the arts; nor will it be eaſy to name an illuſtrious author of that period, but the introduction of printing in the reign of Edward IV, forms a memorable epoch. The writers of the ſixteenth, and following centuries, are numerous and well known. LITERATURE.

On a comparative view of European literature, it may be obſerved that the Italians, its firſt reſtorers, excel in poetry, hiſtory, and other departments of the Belles Lettres; but about the year 1600, their taſte began to decline, and a mental effeminacy aroſe, which is conſpicuous in the fantaſtic ſocieties and academies, and in the extravagant flatteries which every writer thought due in politeneſs to another; the

term

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term *illuſtrious* becoming as familiar as that of *Signior* and *Madama*, a waſte of literary fame, which rendered it of no value. The French even originally excelled in romance and light poetry, and that pleaſing and minute ſpecies of biography, called memoirs; they have produced few works of original genius, but yield to no nation in ſcientific productions, and in literary diſquiſitions, written with good ſenſe, preciſion, and accuracy. Spaniſh literature forms a vaſt treaſure, little known to other nations; and ſcarcely any department can be named, in which excellent writers do not appear. The native German, Daniſh, and Swediſh literature, is but of recent celebrity. To complete the ſole intention of this parallel, the grand feature of Engliſh literature, is original genius, tranſmitted even from Roger Bacon, to our Shakeſpeares, Miltons, Newtons, and Lockes; not to dwell here on claims more minute, but equally firm. In the ſcientific departments, England muſt yield to France, except in the various branches of mathematical knowledge, the inſtitution of the Royal Society, and the genius of Newton, having attracted the greateſt talents within their ſphere, to the neglect of other departments of curious inveſtigation. The Engliſh clergy, who far exceed in learning any other body of that deſcription in Europe, have always cultivated claſſical literature, with diſtinguiſhed zeal and predilection.

An old writer obſerves, that during the civil war under Charles I, there were "more good, and more bad books, printed and publiſhed in "the Engliſh tongue, than in all the vulgar languages of Europe[6]." Perhaps Germany may now exceed our literary efforts; yet more novels are ſuppoſed to be publiſhed in England in one month, than in all the reſt of Europe in a year. Our literary journals, in which we may alſo claim a great degree of excellence, may indicate to foreigners, the vaſt extent of modern Engliſh literature.

The preſent ſtate of the arts in England, is worthy of ſo opulent and refined a country, and the progreſs has been rapid beyond example. The late Horace Walpole, Earl of Orford, has delineated from the papers of the induſtrious Vertue, a pleaſing and animated picture of the hiſtory of the arts in this country. Some faint traces of painting

[6] Chamberl. 191.

occur

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occur in the thirteenth century; but the names and country of the artiſts do not appear, except that of William of Florence, where the art had faintly begun to revive. In the reign of Edward I, the magnificent caſtles built in Wales, atteſt the genius and ſkill of the architects, while their individual fame is loſt in obſcurity: and towards the end of the fourteenth century, rich monuments of architecture and ſculpture, are interſperſed with ſome few remains of painting. The Miſſals in particular, and other manuſcripts, begin to be illuminated or adorned with miniature paintings of great luſtre; and as the Gothic architecture is by ſome conceived to have originated from the ſhrines for relics, ſo the larger paintings ſeem mere amplifications of the manuſcript miniatures. But while the neighbouring Flanders began to diſplay many native names, England continued, till the laſt century, to import her chief painters from abroad, as Holbein, Antonio More, Zucchero, Janſen, Mytens, Rubens, Vandyke, Lely, Kneller, &c. &c. Yet in miniature and engraving, there were excellent native artiſts in the ſeventeenth century; and in the beginning of that century, an eminent native architect, Inigo Jones. In the beginning of the eighteenth century, even the noble architecture of St. Paul's, did not redeem the other arts from great decline, till Hogarth inſtituted examples of ethic and characteriſtic painting, which have deſervedly excited the admiration of Europe. His fame as an artiſt has been eclipſed by his inventive genius, but his pictures of Marriage à-la-Mode, and many others, are finiſhed with a care, minuteneſs, and harmony, worthy of an eminent Dutch maſter. The preſent reign has not only been diſtinguiſhed by patronage of the arts, but been fortunate in exuberance of artiſts of deſerved reputation. To enumerate the living might be invidious, or occaſion ſuſpicions of partiality, but among the deceaſed may be named Sir Joſhua Reynolds, eminent in hiſtory and portrait, and by his ſcientific diſquiſitions on the art; Gainſborough and Wilſon in landſcape, &c. &c. Though in the ſeventeenth century, Faithorne, and one or two others, ſhewed great ſkill and ſpirit in engraving on copper, yet our chief artiſts, even in the eighteenth century, were French, till the national fame was raiſed by Strange, Woollet, Worlidge, and others, who have been ſucceeded by ſuch a

LITERATURE. number of excellent artiſts in this department, that England excels every country, and the prints executed in London attract univerſal admiration and imitation. Architecture and Sculpture now alſo boaſt of many diſtinguiſhed native names; but in muſic we ſtill revere the ſuperior ſkill of the Germans and Italians, though our maſters far excel thoſe of any other country, and France in particular, where, however the horrible diſcords faſhionable for 200 years, begin at length to yield to the German and Italian taſte.

Education. In a view of any country, education forms one of the moſt important topics, as its conſequences extend to the eſſence and well-being of the community. The education of the lower claſſes in England, had become extremely neglected, before the benevolent inſtitution of the Sunday ſchools. There can be no doubt that where the common people are the beſt inſtructed, there they will be found the moſt quiet, contented and virtuous; as they feel a conſcious ſelf reſpect, are accuſtomed to be treated with regard by each other, and will cheerfully extend the ſame reverential conduct towards their ſuperiors in the favours of fortune. Political theories, being founded merely on analogical reaſoning, and no two caſes, climes, nor countries, being preciſely ſimilar, they become very hazardous in experiment; but a practical eſtimate of the advantages of general education, may be formed by comparing the neglected peaſantry of Ireland, with the peaceable Highlanders of Scotland, where public ſchools exiſt in every pariſh. The middle and higher ranks of Engliſh, ſpare no expence in the education of their ſons, by private tutors at home, or at what are called day-ſchools and boarding ſchools. The former kind in which the maſter only attends to mental culture, ſeems preferable to the latter, which requires additional cares of the child's health, diverſions, and conduct. Our moſt eminent public ſchools, are thoſe of St. Paul's, Weſtminſter, Eton and Wincheſter; and from them have ariſen ſome of the moſt diſtinguiſhed ornaments of their country. The ſcholars in due time

Univerſities. proceed to the univerſities of Oxford and Cambridge, foundations of an extent and grandeur that impreſs veneration. The number and æra of the colleges will appear from the following liſt.

Univerſity

Univerſity of Oxford.

1263. Baliol College.—Founder, John Baliol, (father of John, King of Scotland,) and his wife, Dervorgilla, Counteſs of Galloway.
1276. Merton College.—Walter Merton, Biſhop of Rocheſter.
1292. Univerſity College.—William, Archdeacon of Durham [3].
1316. Exeter College.—Walter Stapleton, Biſhop of Exeter.
1323. Auriell College.—Adam de Brome, Almoner to Edward II.
1340. Queen's College.—Robert Egleſfield, Chaplain to Queen Philippa.
1379. New College.—William of Wickham.
1438. All Souls.—Archbiſhop Chicheley.
1458. Magdalen College.—William of Wainflet.
1613. Brazen Noſe. William Smith, Biſhop of Lincoln.
1516. Corpus Chriſti.—Richard Fox, Biſhop of Wincheſter.
1539. Chriſt's Church.—Wolſey and Henry VIII.
1556. Trinity College.—Sir Thomas Pope.
1557. St. John's.—Sir Thomas White.
1571. Jeſus College.—Dr. Price.
1613. Wadham.—Nicholas Wadham, Eſq.
1624. Pembroke.—Thomas Teſdale, Eſq [4].

There are beſides ſeveral halls, or ſmaller colleges, and ſome recent foundations. The laudable favour of the Oxonians, adores Alfred as the founder of what is called the univerſity college, and even aſſigns the date of 886; but candid antiquaries aſſert, that the paſſage in one or two old Chronicles, alledged in ſupport of this idea, is a manifeſt interpolation, not to be found in the beſt manuſcripts: and though great ſchools of divinity may have previouſly exiſted at Oxford, ſuch were alſo known at other places, which lay no claim to the title of univerſity.

Univerſity of Cambridge.

1284. Peter-houſe.—Hugh Balſham, Biſhop of Ely.
1340. Clare hall.—Elizabeth de Burg, Counteſs of Ulſter.
1347. Pembroke-hall.—Mary de Valentia, Counteſs of Pembroke.
1348 and 1557. Gonville and Caius.—The Doctors ſo named.
1353. Trinity hall. William Bateman, Biſhop of Norwich.
1356. Bennet, or Corpus Chriſti.—Henry Duke of Lancaſter.
1443. King's College. Henry VI.
1446. Queen's College.—Margaret of Anjou.
1474. Catharine-hall.—Dr. Woodlark.
1497. Jeſus College.—John Alcock, Biſhop of Ely.
1506. Chriſt's College,
1511. St. John's } Margaret, Counteſs of Richmond, Mother of Henry VII.
1520. Magdalen College.—Thomas, Lord Audley.
1546. Trinity College.—Henry VIII.
1589. Emanuel.—Sir Walter Mildmay.
1588. Sydney College.—Frances Sydney, Counteſs of Suſſex [5].

[3] Gough's Cam. I. p. 302, &c. [4] Ibid. [5] Ibid. II. 124, 131. Gray's Poems, Notes.

Education. Of the two univerſities many minute deſcriptions have appeared. Oxford is the more majeſtic, from the grandeur of the colleges, and other public buildings, and the ſuperior regularity and neatneſs of the ſtreets; but the chapel of King's college, at Cambridge, is ſuppoſed to excel any ſingle edifice of the other univerſity. Both of thoſe magnificent ſeminaries impreſs every feeling mind with reverential awe, not only by their architectural dignity, but by a thouſand collateral ideas of ancient greatneſs and ſcience.

To attain the degree of bachelor of arts, a reſidence of twelve terms, or three years, is neceſſary at Cambridge, four at Oxford. In both univerſities, three years more muſt elapſe, before the ſtudent can commence maſter of arts; after which ſeven years are required before he can become bachelor of divinity; and four more for the doctor's degree. That of doctor of laws may be acquired in ſeven years after he is declared maſter of arts.

Female education is conducted in England with great elegance and expence. Even in the middle ranks of life, young women are generally taught muſic and drawing, a plan which ſurpriſes foreigners, who ſeldom teach theſe arts, except in caſes of decided propenſity. They are, indeed, of little or no uſe in future life; but they enlarge and cultivate the mind, and ſerve to prevent the dangers of idleneſs.

Cities. In giving a brief account of the chief cities and towns in England, a few of the moſt important ſhall be arranged according to dignity, opulence, and population; and the others ſhall be ſtated without preference, in a kind of progreſs from the ſouth-weſt to the north.

London. London, the metropolis of England, and perhaps the moſt populous and rich city on the face of the globe, is ſituated in an extenſive plain, or valley, watered by the Thames, and only confined on the north by a few ſmall elevations; being a place of great antiquity, and firſt mentioned by Tacitus. It was in former times of far leſs extent, and ſurrounded with walls, but now includes Southwark, in itſelf a city, on the other ſide of the Thames, and Weſtminſter, another city on the weſt; ſo that like ſome places of ancient geography, it might be named *Tripolis*, or three cities. The noble river Thames is here about 440 yards in breadth, and is crowned with three bridges, the moſt ancient of

of which was formerly covered with houſes and ſhops, now removed; but the inconveniencies it preſents to navigation, cannot be ſo eaſily remedied. The Thames is crowded with a foreſt of maſts, and conveys into London the wealth of the globe, forming an excellent port, without the danger of expoſure to maritime enmity. It is, however, a great defect, that inſtead of open quays and ſtreets, on the banks of the ſtream, the view is obſtructed, on both ſides, by irregular maſſes of building, which do not even admit of a path. London preſents almoſt every variety which diverſifies human exiſtence; upon the eaſt it is a ſea-port replete with mariners, and with the trades connected with that profeſſion. In the centre it is the ſeat of numerous manufactures, and prodigious commerce; while the weſtern, or faſhionable extremity, preſents royal and noble ſplendour, amidſt ſcenes of the higheſt luxury, and moſt ruinous diſſipation.

Few cities can boaſt a more ſalubrious ſituation, the ſubjacent ſoil being pure gravel, by which advantage, united with extenſive ſewers, the houſes are generally dry, cleanly, and healthy. Proviſions and fuel are poured into the capital, even from diſtant parts of the kingdom, the latter article being coals, from the counties of Northumberland and Durham, transferred by ſea, and thence denominated ſea-coal [6]. The ſmoke is eſteemed to purify the dampneſs of the air, but injures the beauty of the edifices; the ſublime architecture of St. Paul's, for inſtance, being obſcured by ſable weeds. London requires in one year 101,075 beeves, 707,456 [7] ſheep, with calves and pigs in proportion; the vegetables and fruits annually conſumed in the year, are valued at a million ſterling [8].

The population of London has by ſome been exaggerated to a million of ſouls; but by the moſt recent and authentic accounts, it does not contain above ſix hundred thouſand. Its length from Hyde-park Corner on the weſt, to Poplar on the eaſt, is about ſix miles; the breadth unequal, from three miles to one and leſs; the circumference may be

[6] Mr. Middleton, in his View of Middleſex, 1798, ſuppoſes that half a million of chaldrons are yearly conſumed in that county. [7] Ib. 411.

[8] Ibid. 267. Mr. Pennant, Brit. Zool. iv. 9. ſays, 60,000 lobſters are annually brought to London, from near Montroſe.

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about ſixteen miles. The houſes are almoſt univerſally of brick, and diſpoſed with inſipid ſimilarity; but in recompence, moſt of the ſtreets are excellently paved, and have convenient paths for foot-paſſengers, a mark of reſpect to the common people, almoſt unknown to the capitals on the Continent. Another national feature, is the abundance of charitable foundations, for almoſt every infirmity and diſtreſs incident to human nature. The multitude and rich diſplay of the ſhops impreſs ſtrangers with aſtoniſhment, nor are they leſs ſurprized at the conſtant torrent of population rolling through the principal ſtreets, nor at the ſwarm of carriages at all times crowding all the roads to the capital, and the nocturnal illuminations which extend even to four or five miles of the environs. Though the impreſſion of the tide be felt as far as Staines, the Thames at London, and a conſiderable way below, is untainted with ſalt. Its waters are raiſed by machinery, and conducted in innumerable pipes for domeſtic uſes, while the parts more remote are ſupplied with water from ſome ſmall ponds near Hampſtead, and from that laudable work of Middleton, the New River, which conveys a copious addition from the north. The water of the Thames is ſaid to impart peculiar qualities to the liquor called porter; but this idea perhaps only tends to ſtrengthen the monopoly of the London brewers.

The environs of London preſent a ſpectacle almoſt as grand and intereſting as that of the metropolis itſelf. Extenſive ſtreets of villas and houſes, are continued in almoſt every direction, within ſeven or eight miles. Yet few of the public edifices in London can pretend to much magnificence. The cathedral of St. Paul's forms one of the chief exceptions; the exterior architecture of this principal cathedral of the proteſtant faith, being majeſtic to a degree of ſublimity, but the interior is defective in decoration. The tombs recently ordered, in imitation of thoſe at Weſtminſter, will contribute to obviate this remark. In the colonnade, fountains, &c. it yields to St. Peter's at Rome; and, in general, the public edifices of London are in diſadvantageous poſitions, without proper avenues or points of proſpect. It is ſurpriſing that fountains, or jets d'eau, which ſo much diverſify the ornaments of a city, though in a garden they be puerile, ſhould be almoſt unknown in London, except

cept a diminutive ſpecimen in one of the courts of the Temple. Weſtminſter-abbey may claim the next rank to St. Paul's cathedral, being not only in itſelf a grand impreſſive edifice, of the Gothic claſs, but as being the ſanctuary of the illuſtrious dead, of all ranks, periods, and profeſſions, from the victorious monarch down to the humble pedagogue. It was founded by Sebert, King of the Eaſt Saxons; was afterwards ruined by the Danes, and re-founded by Edward the Confeſſor, whoſe tomb is the moſt ancient now remaining. The preſent edifice was the work of Henry III; and Henry VII added an elegant chapel, and his tomb, the work of Torrigiano; in the vaults under this chapel the late monarchs and their offspring have been depoſited. The body of the edifice is crowded with illuſtrious tombs, decreed by the nation, or erected at the expence of individuals; this part is open to general inſpection; and others more retired, are diſplayed by the attendants for a trifling remuneration. Adjacent are the two houſes of parliament, and Weſtminſter-hall, a vaſt room, 230 feet long, and 70 wide, with a curious cieling of Iriſh oak, and apartments on the ſide, in which are held the principal courts of juſtice.

The churches and chapels exceed 200 in number, and a few are of beautiful architecture. Some are the productions of Inigo Jones; as is alſo the noble banqueting-houſe at Whitehall, with a maſterly cieling painted by Rubens, repreſenting the apotheoſis of James I.

Near London-bridge, a pillar of 193 feet elevates his bold front above moſt of the ſpires, and is called the Monument, being deſtined to commemorate the conflagration of London, in the reign of Charles II. The Tower is only venerable from ancient fame; and remarkable for the curioſities which it contains. The new edifice erected by the Company trading to the Eaſt Indies, has a conſiderable degree of elegance, and ſome of the halls of the companies have a reſpectable appearance. The Bank is a ſtructure of the Ionic order, more remarkable for intrinſic wealth than exterior magnificence. The architecture of the priſon called Newgate is ſingularly appropriate. Somerſet Houſe preſents an elegant ſpecimen of recent architecture, but may, perhaps, in future times be found as deficient in ſolidity as it is at preſent inconvenient in the height and ſteepneſs of the ſtairs, and in ſome other

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reſpects. The terrace of the Adelphi is a pleaſing piece of architecture, and preſents an intereſting proſpect of the river. The Pantheon is an elegant edifice, reſembling that at Rome, but dedicated ſolely to public amuſements. The royal palace of St. James's is an irregular building, of very modeſt aſpect. The queen's palace, formerly Buckingham-houſe, only aſpires to elegant convenience, but contains ſome valuable paintings, and an excellent library, formed ſolely by the taſte of the reigning monarch. The palace of Kenſington preſents an exuberance of valuable pictures, little known, and rarely viſited. The houſes in the Weſt end of the town, of themſelves ſhew the gentle gradations of rank in England, thoſe of the chief nobility being rarely diſtinguiſhable from the others; the more remarkable are, Foley-houſe, the Duke of Manchester's; the late Mrs. Montague's, in Portman ſquare; Cheſterfield-houſe; Lord Spencer's, in the Green-park; Marquis of Lanſdowne's, Berkeley-ſquare; Duke of Northumberland's at Charing-croſs; Burlington houſe, with a fine colonnade behind the front wall, and thoſe of the Duke of Devonſhire and the Earl of Bath, all in Piccadilly; nor muſt Cumberland-houſe and Carleton-houſe, in Pall-Mall, be forgotten.

York.

Next to the capital in dignity, though not in extent nor opulence, is York, which is not only the chief city of a large and fertile province, but may be regarded as the metropolis of the North of England. The name has been gradually corrupted from the ancient Eboracum, by which denomination it was remarkable even in the Roman times, for the temporary reſidence and death of the Roman Emperor, Severus. This venerable city is divided by the River Ouſe; and the Gothic cathedral is of celebrated beauty, the weſtern front being peculiarly rich, the chief ſpire very loſty, and the windows of the fineſt painted glaſs. York divides with Edinburgh the winter viſits of the Northern gentry.

Liverpool.

But Liverpool, in Lancaſhire, is now generally allowed to approach the neareſt to London in wealth and population, being the ſeat of a vaſt commerce, which has been continually on the increaſe, ſince the beginning of this century, when it was merely a village. It is firſt mentioned in the reign of William the Conqueror; yet in Leland's time, was not even a pariſh, but had only a chapel, the pariſh-church being that of

of Walton. In 1699, Liverpool was admitted to the high honour of being conſtituted a pariſh. In 1710 the dock was conſtructed; and the chief merchants came originally from Ireland, a circumſtance which has given a diſtinct tinge to the manners of the town. Thenceforth the progreſs was rapid, and in 1760 the population was computed at 25,787 ſouls [9]. In 1773 they amounted to 34,407, in 1787 to 56,670; at preſent they may be computed at between 70 and 80,000.

The number of ſhips which paid duty at Liverpool, in 1757, was 1371; in 1794 they amounted to 4,265. In the African trade, a diſtinguiſhing feature of Liverpool, there was only one ſhip employed in 1709; in 1792 they amounted to 132. It was computed, that between the end of Auguſt 1778, and that of April 1779, Liverpool ſent out no leſs than 170 privateers [10]. In the recent act for the contribution of ſeamen to the royal navy, according to the ſhips regiſtered in each, the eſtimate is as follows:

London,	5725	Hull,	731	Briſtol,	666
Liverpool,	1711	Whitehaven,	700	Whitby,	573
Newcaſtle,	1240	Sunderland,	669	Yarmouth,	506.

Briſtol is ſtill a large and flouriſhing city, though much of its commerce with the Weſt Indies and America have paſſed to Liverpool. This metropolis of the Weſt of England gradually roſe to eminence in the Anglo-Saxon period; and was ſo flouriſhing and opulent in the reign of Henry II, that, beſides other charters, he granted the poſſeſſion of Dublin in Ireland; and a colony from Briſtol was accordingly tranſplanted [11]. The trade with Ireland has continued chiefly to center in this city: even in that reign, as ancient writers inform us, the port of Briſtol was replete with veſſels from Ireland, Norway, and other parts of Europe. Briſtol is pleaſantly ſituated at the confluence of the Froome with the Avon. Beſides the cathedral, there is a large church of Gothic conſtruction, that of Redcliffe, founded in the thirteenth century, and improved and repaired by Canyng or Canyngs, an opulent merchant of the fifteenth century, celebrated by William of Worceſter [12]. In the treaſury room of this church, is an ancient cheſt, the

Briſtol.

[9] Aikin's Man. 333. et ſeq. [10] Ibid. 364, 371. [11] Barrett's Briſtol, 49. 57.
[12] Barrett's Briſtol, 573. 627.

ſource

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ſource aſcribed to ſeveral literary forgeries. The hot-wells in the neighbourhood appear to have been known in 1480; but the water was chiefly uſed externally, till about the year 1670, when a baker dreaming that his diabetes was relieved by drinking the water, he tried the experiment, and recovered [13]. Since that period its reputation has increaſed, and many commodious and elegant erections have contributed to recommend theſe wells to invalids. In the adjacent rocks are found beautiful cryſtals, which, before the introduction of artificial gems, were greatly in faſhion for female ornaments. The trade of Briſtol is chiefly with Ireland, the Weſt Indies, or North America, Hamburgh, and the Baltic; that with Guinea, not the moſt laudable, is reſigned to Liverpool. By the navigation of the two rivers Severn and Wye, Briſtol alſo engroſſes moſt of the trade of Wales. In 1787, Briſtol employed about 1600 coaſting veſſels, and 416 ſhips engaged in foreign commerce [14]. Inhabitants about 80,000.

Bath.

The proximity may here authorize the mention of Bath, eſteemed the moſt elegant town in England. The hot-baths, from which it derives its name, were known in the Roman times, nor was their celebrity loſt even in the dark period of Anglo-Saxon hiſtory. But the town has been greatly enlarged and decorated in the laſt century. The waters are uſed both internally and externally, chiefly in gouty, bilious, and paralytic caſes, being frequented at two times in the year, what is called the ſpring ſeaſon, from April to June, and the autumnal from September to December. Two thirds of the company are attracted merely by amuſement, ſociety, and diſſipation, in all which it is only ſecond to London. Situated in a vale, Bath is very hot in ſummer. The houſes are conſtructed of white ſtone, which abounds in the vicinity.

But next to Briſtol in point of opulence, muſt be claſſed the towns of Manchester, Birmingham, and Sheffield.

Manchester.

Manchester, in Lancaſhire, was known in the Roman times under the name of Mancunium, a ſmall Roman ſtation; but it continued in obſcurity till the time of Elizabeth [15], when Camden mentions its manufacture of woollen-cloths, then called *cottons*. During the civil wars under Charles I. Manchester remained in the hands of the Parliament.

[13] Barrett's Briſtol, 93. [14] Ibid. 190. [15] Aikin's Man. 149.

In

In 1708, the inhabitants were only computed at 8000. In 1757, they fell ſhort of 20,000, at preſent they are ſuppoſed to amount to about 70,000. The cotton manufactures of Mancheſter are ſufficiently known over Europe; and the machinery, greatly indebted to the genius of an Arkwright, excites aſtoniſhment at the progreſs of human art and induſtry [16]. Cities and Towns.

Birmingham, in Warwickſhire, was originally a village, belonging to a family of the ſame name, whoſe monuments remain in the old church. Leland mentions it as a town inhabited by ſmiths and cutlers, in the time of Henry VIII; and by lorimers, now called bit-makers. The extenſion and improvement of Birmingham originated in a great degree from Mr. John Taylor, who introduced the manufacture of gilt buttons, and japanned and enamelled works; but the toy manufacture was known in the reign of Charles II. The great fabric, called Soho, belonging to Meſſrs. Boulton and Watts, is ſituated about two miles from Birmingham, but in Staffordſhire. Between the year 1741 and 1790, Birmingham had received an augmentation of ſeventy-two ſtreets, 4172 houſes, and 2332 inhabitants [17]: the preſent population is computed at 60,000. Birmingham.

Sheffield, in the moſt ſouthern part of Yorkſhire, is ſtyled by Leland the chief market-town in Hallamſhire, (for in the North, many particular diſtricts uſurp the name of ſhires.) The company of cutlers of Hallamſhire, was eſtabliſhed by act of parliament in 1625; but Sheffield had been diſtinguiſhed for a kind of knives, called whittles, and other articles of cutlery, as early as the thirteenth century; yet, till within the laſt half century, the manufactures of Sheffield were conveyed weekly to the metropolis, on pack-horſes. In 1751, the river Don was rendered navigable to within two miles of the town, which facilitated the export. The plated goods commenced about 1758. In the year 1615, the population only amounted to 2152; in 1755 to 12,983; in 1789 about 30,000. At preſent the population may be about 45,000 [18]. Sheffield.

[16] Aikin's Mancheſter, 149. 156.
[17] Hutton's Hiſt. of Birmingham.
[18] Aikin's Man. 539. et ſeq.

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The other chief towns in England, not aſpiring to ſuch pre-eminence, though ſeveral be of far more importance than others, ſhall be claſſed, as before mentioned, in a kind of geographical order, beginning at the South-weſt, and proceeding to the North.

Falmouth.

Falmouth, in Cornwall, the moſt weſterly port in England, is chiefly remarkable for the arrival and diſpatch of packet boats; but Exeter, in the adjacent county of Devon, is an ancient and reſpectable city. It is the ſeat of an extenſive commerce in coarſe woollen goods, manufactured in a part of Somerſetſhire, and in Devon and Cornwall [19]. They are exported to Italy, and other parts of the Continent, to the annual value, as is ſuppoſed, of 600,000*l.*, and the Eaſt India Company purchaſe yearly to a conſiderable amount. Beſides the native wool of the above-mentioned counties, Exeter imports from Kent about 4000 bags a-year. Some ſhips are alſo occupied in the cod-fiſhery of Newfoundland, and in the Greenland capture of whales. The imports are from Spain, Italy, Hamburgh, and the Baltic; and coals from the North of England and Wales. It is, moreover, the reſidence of many genteel families; and the frequent reſort of others from the neighbouring counties.

Exeter.

Dorcheſter.

Dorcheſter, the chief town of the county of Dorſet, is a place of conſiderable antiquity, ſituated on the river Frome; but has no manufactures, and is only celebrated for its malt liquor.

Saliſbury.

Saliſbury, the principal town of Wiltſhire, is chiefly remarkable for extreme neatneſs, and for its cathedral, a beautiful piece of Gothic architecture, with the loftieſt ſpire in England, the height being 400 feet. There is a manufacture of flannels, and another of cutlery goods and hardware, the ſuperiority of the ſciſſars being particularly noted. Wilton, in the ſame county, is famed for the manufacture of beautiful carpets.

Winchester.

Winchester, the chief city of Hampſhire, was, for many centuries, the metropolis of England, a pre-eminence which it did not wholly loſe till the thirteenth century [20]. The port was Southampton, but the ſuperior ſafety and convenience of that of London, gradually reſtored the

[19] Aikin's Engl. delineated, p. 335.

[20] Milner's Wincheſt.

latter to that metropolitan dignity which it held in the Roman period. Cities and Towns.
Winchester remains a venerable city, with many veſtiges of ancient fame and ſplendour. It is ſituated in a bottom, amid open chalky downs, upon the ſmall river Itchyn. The cathedral rather impreſſes the idea of majeſtic gravity, than of magnificence; and has no ſpire, having been erected before that mode of architecture was uſed. The aſhes of ſeveral Saxon monarchs are here preſerved with reverence. Not far from the cathedral ſtands the celebrated college, founded by William of Wickham, and which has ſent forth many illuſtrious characters. The regulations of this ſchool are, in ſome inſtances, peculiar and ſevere; but in this, and the other grand Engliſh ſeminaries, the equality of the pupils, except in reſpect of age and abilities, and even the ſubſerviency in which the younger are held by the elder, tend to ſteel and fortify the mind againſt the ſubſequent cares and emulations of life. In the center of the city is a ſmall, but moſt elegant Gothic croſs; and at the weſtern extremity is the ſhell of a palace, built under the direction of Sir Chriſtopher Wren, yet heavy and inelegant; it was begun by Charles II, but left unfiniſhed at his death. It has ſince been uſed for French priſoners, and in 1796 was the reſidence of about 640 emigrant prieſts from France.

In the ſame county is ſituated Portſmouth, the grand naval arſenal Portſmouth.
of England. The harbour is noble and capacious, narrow at the entrance, but ſpreading out into an inland bay, five or ſix miles in length, and from two to four in breadth. The advantages derived from nature have been improved by the art and induſtry of ſucceſſive generations; and to a patriot, Portſmouth preſents one of the moſt intereſting ſcenes to be found in the Britiſh dominions. The regular fortifications towards the land, in themſelves happily a novelty to the Britiſh eye; the magnitude and variety of the maritime objects and manufactures, and the proſpect of Spithead, the grand focus of naval armament, conſpire, with a thouſand relative ideas concerning the power of England, ſupreme in every ſea, to excite our aſtoniſhment and exultation.

Lewes is eſteemed the chief town of Suſſex; the ſituation is loſty Lewes.
and pictureſque, eſpecially the ſite of the ancient caſtle, belonging to the powerful Earls of Warren and Suſſex. Beneath, in a pleaſant

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plain, watered by the River Ouſe, ſtand the ruins of an ancient nunnery.

Brighthelmſtone.

Chicheſter retains ſome little traffic. Brighthelmſtone is a faſhionable reſort for the ſea air and bathing; an extenſive beach extends four miles under lofty cliffs, and on the other ſide are wide open downs, compoſed of numerous verdant hills, diverſified with winding cavities: towards Shoreham are ſome pits of a kind of bitumen, which might, perhaps, be uſed in ſome manufacture. When dried and rolled by the waves, it forms balls of various ſizes, frequent on the beach, and formerly uſed as fuel by the poor, though ſince forbidden, on account of the noxious ſmell. Brighthelmſtone not only preſents the neareſt open ſhore to the capital, but is diſtinguiſhed for the peculiar mildneſs and ſalubrity of the air.

Canterbury.

Canterbury, the chief town of Kent, and the metropolis of the Engliſh church, is chiefly remarkable for eccleſiaſtical antiquities; and the county town is Maidſtone, noted for hops and thread. Kent preſents many other important towns, as Deptford, Greenwich, Woolwich, Graveſend, Chatham, Rocheſter, and the faſhionable reſorts of Margate, Ramſgate, and Tunbridge. Dover and Deal are remarkable havens.

Having completed this brief ſurvey of the chief towns to the ſouth of the Severn and the Thames, thoſe of the middle and northern counties may be again commenced from the weſt.

Hereford.

Hereford, the capital of a county bordering on Wales, was known in the Saxon times as an epiſcopal ſee. The caſtle, ſuppoſed to have been founded in the reign of the Confeſſor, is on the left bank of the river Wye. The cathedral is large, but the town preſents little remarkable, having gone into great decay: the only manufacture is that of gloves[21].

Glouceſter.

Glouceſter, the capital of the county ſo called, is admired for the regularity of the four principal ſtreets, joining in the center of the town. It avails itſelf of the traffic of the Severn, which, among other fiſh, affords a luxurious ſupply of lampreys. This town has been recently celebrated for its neatneſs, and the cheapneſs of proviſions.

[21] Gough's Camden, ii. 450.

Worceſter

Worceſter is alſo ſituated on the noble river Severn, over which there is a beautiful bridge. The manufactures are chiefly gloves and woollen ſtuffs; and the porcelain maintains a high reputation. CITIES AND TOWNS. Worceſter.

On the Eaſt, the firſt town of note is Coventry, eſteemed the moſt inland and centrical of the Engliſh towns, whence, perhaps, the military phraſe of ſending a man to Coventry, where he would be the moſt remote from ſervice. The manufactures are chiefly ribbons, with a few gauzes and camlets. The beautiful croſs, erected in 1541, after being much damaged by the lapſe of years, has been taken down [22]. Coventry.

The next memorable town is Norwich, the capital of Norfolk, from its ſize and conſequence juſtly ſtyled a city *. It is, however, not mentioned till the year 1004, when it was ruined by the Danes. The worſted manufactory is ſuppoſed to have been introduced here by the Flemings, in the 12th century, and was followed by that of ſayes arras, bombazeens, &c. Of late the damaſks, camlets, crapes, ſtuffs, &c. here wrought, have been computed at the yearly value of 700,000*l.*; but the faſhionable uſe of cottons, and the interruption of commerce by war, have conſiderably leſſened the conſumption. The wool is chiefly from the counties of Lincoln, Leiceſter, and Northampton; the chief exports to Holland, Germany, and the Mediterranean [23]. Norwich is of courſe opulent and extenſive; but the ſtreets are confined and devious. Norwich.

Yarmouth is a noted ſea-port, with a beautiful quay, and remarkable for its fiſheries of mackarel in May and June, and herrings in October and November: the latter cured by ſalt, and dried in the ſmoke of wood, are called red-herrings, and, beſides home conſumption, form a conſiderable article of export to Spain and Italy. Yarmouth.

In proceeding northwards, Lincoln muſt arreſt attention, though now much fallen from its former fame. The interior of the cathedral is admired for its lightneſs and magnificence. The ſheep of the county form a celebrated breed, but the wool goes chiefly to Norwich. Lincoln trades in coals, imported on the Trent. Lincoln.

[22] Gough's Camden, vol. ii. p. 345. [23] Aikin, 216.

* A Biſhop's ſee conſtitutes a city.

In

Cities and Towns. Chester.

In a chorography of England, Leiceſter and Shrewſbury might deſerve deſcription, but its geography can only embrace the moſt important topics. The city of Cheſter muſt claim the next conſideration. It is of Roman origin, and the chief ſtreets are ſingular in their conſtruction, being excavated beneath the level of the ground, while a covered portico, in the front of the houſes, affords an elevated and ſheltered foot-path; beneath are the ſhops and warehouſes, on the level of the ſtreet, to which the paſſenger deſcends by occaſional ſtairs. The trade of Cheſter is not conſiderable, but it carries on a ſhare of the traffic with North Wales; and its two annual fairs are famous for the ſale of Iriſh linens. It is the favourite reſidence of many genteel families from Wales [24].

Lancaſter.

Near an extenſive bay of the Iriſh Sea, which might now be termed the bay of Lancaſter, while antiquaries affect to retain the Roman name of *Moricambe*, ſtands Lancaſter, an ancient and populous town. The name is in the North pronounced Loncaſter, the proper etymology, as it ſtands upon the River Lon. When the counties of Cumberland and Weſtmoreland belonged to the Scots, this was regarded as a kind of frontier place, and was defended by a ſtrong caſtle, ſituated on a commanding eminence. Lancaſter afterwards gave the title of Duke to princes of the royal blood; and the contentions of the houſes of York and Lancaſter are well known. There is a bridge of five arches over the Lon, which opens into a conſiderable haven; the ſeat of a moderate commerce, eſpecially with the Weſt Indies.

Hull.

On the Eaſt, the extenſive province of Yorkſhire contains many flouriſhing towns, beſides the capital, York, and Sheffield, already deſcribed. On the Humber, the wide receptacle of many rivers, ſtands the great ſea-port of Hull, or Kingſton-upon-Hull; the latter name being only that of the rivulet. The town was founded by Edward I. Several privileges were obtained from Richard II; and the firſt ſtaple of trade was ſtock-fiſh imported from Iceland. In the civil wars of laſt century, Hull diſplayed the firſt flag of defiance againſt the Monarch. The harbour is artificial, and is ſuppoſed to preſent the largeſt dock in the kingdom. The trade is important

[24] Pennant's Tours. Aikin, 90.

with

with America, and the ſouth of Europe, but chiefly with the Baltic; and ſeveral ſhips are employed in the northern whale-fiſhery. The coaſting traffic is extenſive in coals, corn, wool, and manufactories; and Hull ſupplies the commerce of many northern counties, having not only communication with the Trent, and other branches of the Humber, but with the rivers and canals of Yorkſhire [25]. Cities and Towns.

Leeds, Bradfield, Halifax, and Wakefield, are the chief centres of the great manufactures of woollen cloths and ſtuffs. Leeds is the principal mart for broad-cloths, or what foreigners term fine Engliſh cloth. It is ſituated on the river Eyre, in an extenſive vale; and the population is computed at ſixteen thouſand: the cloths are woven in the neighbouring villages, but are dyed, prepared, and ſold, at Leeds. The cloth-hall appropriated to the ſale is a vaſt edifice; and the whole buſineſs is tranſacted within the ſpace of an hour on the market days. Halifax is in an elevated ſituation, and very populous. It is the chief market for the thinner woollen cloths, ſuch as ſtuffs, calimancos, &c. Scarborough, on the eaſtern coaſt, is a place of celebrated reſort for ſea-bathing, and the mineral water; the ſite is romantic, but the port is ſmall, and chiefly frequented by fiſhing veſſels. Leeds.

Durham is a pleaſant and venerable city, extending partly over an eminence; the river Were, winding around in the form of a horſe-ſhoe, renders it peninſular. Near the neck of land is placed the caſtle, of which little more than the keep remains; which is ſurrounded by the pleaſant garden of the Biſhop's adjacent palace. Towards the point of the peninſula ſtands the cathedral, a moſt auguſt edifice, in a moſt auguſt ſituation, with deep declivities on the ſouth and weſt, down to the river; the banks of which are finely wooded, and rich in the wild beauties of nature, which have been improved, not injured, by the taſte and opulence of the clergy. The bridge on the eaſt is narrow and meanly executed; but on the ſouth there is an elegant modern bridge; and on the weſt that of Biſhop Flambard is admired for the lightneſs and beauty of the arches. About a mile from the town, on this ſide, ſtands Nevil's Croſs, where Durham.

[25] Aikin, Engl. delin. 56.

David

Cities and Towns.

David II King of Scotland was taken priſoner after a bloody conflict. The cathedral was built about the year 1004, at leaſt the lower part, which belongs to what is called the Saxon form of architecture; and is now repairing at the expence of the Biſhop and Chapter. Some branches of the woollen manufacture are carried on at Durham, and a few elegant carpets have been lately made there in a kind of Moſaic form.

Stockton on the river Tees, Sunderland at the mouth of the Were, and South Shields on that of the Tyne, are ſea-port towns in the biſhopric, (for ſo the county of Durham is commonly ſtyled in the north,) of conſiderable ſize, trade, and population. Hart-le-Pool is only a bathing place.

Newcaſtle.

On the river Tyne ſtands Newcaſtle, ſo termed from a fortreſs erected by Edward I. This is a large and populous town, or rather city, placed in the centre of the grand coal-mines in the counties of Durham and Northumberland, which have for centuries ſupplied London and moſt of the eaſt and ſouth of England with that fuel; which has perhaps contributed more to the manufactures and commerce, and conſequent wealth and power of this kingdom, than any other material or circumſtance. The coal fleets ſometimes amount to five hundred ſail; their ſtation is at Shields, and the quays of Jarrow and Willington. Even as a nurſery of ſeamen the trade is invaluable[26]. In all parts of the neighbourhood are ſeen large carts, loaden with coals, and proceeding towards the port, on inclined planes, without the help of horſes or men, to the great ſurprize of the ſtranger[27]. Near Newcaſtle are alſo found quarries of grind-ſtone; and many glaſs-houſes ſmoke around, the productions of which have been recently of remarkable purity. Other exports are, pickled ſalmon, lead, ſalt, butter, and tallow. The ſuburb of Gateſhead ſtands on the ſouth of the Tyne; and is connected with the city by a grand bridge. The ſhops and crowded ſtreets recal the idea of London; but the latter are generally narrow, ſteep, and incommodious.

Carliſle.

Berwick-upon-Tweed being on the Scotiſh ſide of the river, ſhall be reſerved for the deſcription of that country. The chief remaining

[26] Gough's Camden, iii. 252. [27] St. Fond, Voyage en Angl. i. 163.

town

town in England is Carliſle, the capital of the county of Cumberland, placed at the confluence of the rivers Pettril and Caldew with the Eden [26]. The old fortifications remain nearly entire. It is ſuppoſed to have been the ancient Luguballia; but neither the caſtle nor cathedral are remarkable. The chief manufactures are linens, printed and checked, whips and fiſh-hooks. The town is little populous; and is chiefly memorable for tranſactions in the ancient wars between Scotland and England. Cities and Towns.

Wales, a country abounding in the ſublime and beautiful features of nature, contains many towns of note; and the deſcription of a few has been reſerved to this place, for the greater clearneſs of arrangement.

Caermarthen, the capital of a county, is alſo regarded as the principal town in South Wales: it ſtands upon the river Towy, and was anciently defended by a caſtle now demoliſhed. The haven is ſhallow, and the trade of courſe not very conſiderable [27]. Caermarthen.

Pembroke, on a creek of Milford Haven, is a ſmall town of little commerce. Pembroke.

Caernarvon is eſteemed the chief town of North Wales, for the beauty of the ſituation, regularity of the ſtreets, and above all for the grandeur of the caſtle, one of the moſt magnificent in Europe, founded by Edward I in 1282. Here was born Edward II ſurnamed of Caernarvon, who was immediately created the firſt Engliſh Prince of Wales, his father having equivocally promiſed to the vanquiſhed Welſh a Prince born in their own country, and who could not ſpeak one word of Engliſh. The town has a conſiderable trade with London, Briſtol, Liverpool, and Ireland; and has a beautiful quay along the ſide of the Menai, a ſtreight between North Wales and Angleſea [28]. Caernarvon.

In a brief enumeration of the principal edifices in England, the royal palaces demand of courſe the firſt attention. Windſor-caſtle, ſituated Edifices.

[26] Gough's Camden, iii. 175. For the rivers, Houſman 30.
[27] Gough's Camden, ii. 504. 507. [28] Pennant's Wales, ii. 223. 227.

Edifices. on an eminence, near the Thames, has an appearance truly grand, and worthy of the days of chivalry. The view extends as far as the cathedral of St. Paul's, and the whole ſcene ſtrongly impreſſes the circumſtances ſo vividly delineated in Gray's pathetic ode on Eton College. This palace contains many noble paintings, particularly the cartoons of Raphael. Hampton-court is in a low ſituation, ornamented with aqueducts from the river Colne. This palace is alſo replete with intereſting pictures. The royal gardens alone remain at Richmond, but are totally eclipſed by thoſe of Kew, which are truly worthy of a great and ſcientific prince; the ground, though level, is diverſified with much art, and the collection of plants from all the regions of the known world, fills the admirer of nature with delight and ſurprize. They are ſo diſpoſed, that every plant finds as it were its native ſoil and climate, even thoſe that grow on rocks and lava, having artificial ſubſtitutes.

The royal palace at Greenwich has been long abandoned, but the obſervatory does credit to ſcience. It is a plain edifice, well adapted to aſtronomical obſervations, and at preſent ably ſuperintended by Dr. Maſkelyne. Dr. Herſchell's obſervatory, inſtead of containing his teleſcope, is ſuſpended from it in the open air, at Slough, near Windſor; where he is continually extending the bounds of aſtronomical knowledge.

Among the houſes of the nobility and gentry, or palaces, as they would be termed on the Continent, the firſt fame, perhaps, belongs to Stowe, the ſeat of the Marquis of Buckinghamſhire, which, for its enchanting gardens, has been long celebrated. When Mr. Beckford's magnificent erections at Fonthill are completed, that fame will be far ſurpaſſed. The preſent intention, however, will be better accompliſhed by a brief view of the edifices, as they occur in the order of counties above arranged.

Cornwall.—Mount-Edgecombe, Lord Edgecombe.

Devonſhire.—Powderham-caſtle.

Wiltſhire.—Wilton, Earl of Pembroke's; Fonthill, Mr. Beckford's; Longleate, Lord Weymouth; Wardour-caſtle; Stourton, Mr Hoare's.

Hampſhire.—The Grange, Mr. Henley; the Vine, Mr. Chute.

Surry.—

Surry.—Earl Spencer's at Wimbleton; Farnham caſtle, Biſhop of Wincheſter; Oatlands, Claremont, Eſher; Dulwich, Lord Thurlow. EDIFICES.

Suſſex.—Arundel caſtle, Duke of Norfolk; Goodwood, Duke of Richmond; Cowdray.

Kent,—Knowle, Duke of Dorſet; Penſhurſt, near Tunbridge, a famous ſeat of the Sydneys, &c. &c.

Eſſex.—Wanſtead, Earl of Tilney; Audley-end; Havering, Duke of Ancaſter.

Middleſex.—Sion-houſe, Duke of Northumberland; Oſterly-park, Mr. Child; Holland-houſe, Lord Holland, &c. &c.

Bucks.—Clifdon; Stowe; Bulſtrode, Duke of Portland, &c. &c.

Oxfordſhire.—Blenheim, Duke of Marlborough; Ditchley, Earl of Litchfield; Newnham, Earl of Harcourt, &c.

Glouceſterſhire.—Badminton, Duke of Beaufort; Berkley-caſtle, Earl of Berkley; King's Weſton, Lord de Clifford.

Herefordſhire.—Aconbury, Duke of Chandos; Brampton Bryan, Earl of Oxford; Clifford-caſtle, Lord Clifford.

Worceſterſhire.—Crome-court, Earl of Coventry; Hartlebury, the Biſhop; Hagley Lord Lyttleton. The Leaſowes of Shenſtone is in Shropſhire.

Warwickſhire.—Tamworth caſtle, Earl Ferrers; Warwick-caſtle.

Northampton.—Althorp, Earl Spencer; Eaſton, Earl of Pomfret; Burleigh, Earl of Stamford; and Apthorp, Earl of Weſtmoreland.

Bedfordſhire.—Wooburn-abbey, Duke of Bedford; Luton, Marquis of Bute.

Hertfordſhire.—Hatfield, Earl of Saliſbury; Moore Park, Lord Dundas.

Huntingdonſhire.—Kimbolton Caſtle, Duke of Mancheſter; Bugden, Biſhop of Lincoln.

Cambridgeſhire.—Thorney-abbey, Duke of Beaufort; Maddingly, Sir John Cotton; Milton, Mr. Knight.

Suffolk.—Euſton-hall, Duke of Grafton; Broome-hall, Lord Cornwallis.

Norfolk.—Houghton, Lord Cholmondley; Raynham, Lord Townſhend; Holkham, Earl of Leiceſter.

Lincoln.—Grimſthorpe, Duke of Ancaſter.

Rutlandſhire.—Okeham and Burley, Earl of Winchelſea; Aſhton, Earl of Cardigan.

Leiceſterſhire.—Belvoir-caſtle, Duke of Rutland; Groby, Earl of Stamford.

Nottinghamſhire.—Nottingham caſtle, Duke of Newcaſtle; Welbeck, Duke of Portland; Workſop, Duke of Norfolk.

Derbyſhire.—Chatſworth, Duke of Devonſhire; Keddleſton, Lord Scarborough.

Staffordſhire.—Beau Deſert, Earl of Uxbridge; Dudley-caſtle, Lord Dudley, &c.

Shropſhire.—Okeley-park, Lord Clive; Atcham, Lord Berwick, &c.

Cheſhire.—Cholmondley-hall, Earl of Cholmondley; Eaton hall, Earl of Groſvenor.

Lancaſhire.—Stonyhurſt, Duke of Norfolk; Knowſley, Earl of Derby.

Yorkſhire.—Sheffield manor, Duke of Norfolk; Wentworth-caſtle, Earl of Strafford; Wreſel-caſtle; Caſtle Howard, Earl of Carliſle; Whalton-caſtle, Earl of Ayleſbury; Hornby caſtle, Earl of Holderneſs; Kiveton, Duke of Leeds, &c. &c.

Weſtmoreland.—Pendragon-caſtle, Louther-hall, Lord Lonſdale; Appleby, Earl of Thanet.

Cumberland.—Greyſtock caſtle, Duke of Norfolk; Naworth, Earl of Carliſle.

Durham.—Raby caſtle, Earl of Darlington; Biſhops Aukland, Biſhop of Durham; Lumley-caſtle, Earl of Scarborough; Hilton-caſtle, &c. &c.

Northumberland.—Alnwick, Duke of Northumberland; Morpeth-caſtle, Earl of Carliſle, &c.

Edifices. Wales abounds in elegant edifices, as Winſtay, the ſeat of Sir William Watkins Wynn; Lord Bulkley's near Beaumarais; Duke of Beaufort's in Brecknockſhire; Chirk caſtle in Denbighſhire; Hawarden-caſtle, in Flintſhire; Swanſey and Cardiff Caſtles, in Glamorganſhire; Powis-caſtle in Montgommery; Picton-caſtle, in Pembrokeſhire, &c. &c.

Among public buildings muſt not be omitted the noble hoſpitals for ſeamen and ſoldiers, at Greenwich, and Chelſea. Many of the county-halls have no inconſiderable claims to elegant architecture.

Bridges. The bridges are worthy the ſuperiority of the Engliſh roads: and a ſurpriſing exertion in this department, is the recent conſtruction of bridges in caſt-iron, an invention unknown to all other nations. The firſt example was that of Colebrook-dale, in Shropſhire, erected over the Severn, in 1779. This bridge reſts on abutments of ſtone-work, the main rib conſiſting of two pieces, each 70 feet long, connected by a dove-tail joint, faſtened with ſcrews; the ſhorter ribs, croſs-ſtays, braces, &c. &c. would be little intelligible without a delineation. The road over the bridge is made of clay and iron ſlag, 24 feet wide, and one deep; the ſpan of the arch 100 feet 6 inches; height from the baſe line to the centre 40 feet; the weight of iron employed 378 tons 10 hundred weight [29]. Another iron-bridge has ſince been erected in the vicinity. A ſtupendous iron-bridge was thrown over the harbour at Sunderland, about five years ago; the height of which is 100 feet, and the ſpan of the arch 236. The chief defect of the bridge at Colebrook was underſtood to be, that it formed one entire whole, incapable of partial repairs; but that at Sunderland is compoſed of detached pieces of caſt-iron, which, if damaged in any of the parts, may be withdrawn, and replaced by others. It is ſupported between two ſtrong and elevated ſtone piers; and the arch is ſurmounted at either end by vaſt hoops, ſupporting the platform, or paſſage of the bridge, which is thus rendered almoſt level. When viewed from beneath, the elegance, lightneſs, and ſurpriſing height, excite admiration; and the carriages appear as if paſſing among the clouds.

Several other bridges have been conſtructed on this new and ſingular plan, but not of ſufficient importance to demand deſcription, after ſuch great examples. It is ſaid to be in agitation to throw ſimilar fabrics over the Thames, at Staines and Datchet. Many projectors have

[29] Gough's Camden, ii. 417.

eagerly

eagerly contended for the rebuilding of London bridge; if caſt-iron were employed, it would be more commodious for navigation, and would impreſs the beholder with aſtoniſhment, at the unrivalled pomp and grandeur of Engliſh manufactures. Bridges.

This article is important to the beſt intereſts of the country, and demands particular attention. It is believed that what is called the Caerdyke, extending from the river Nyne, a little below Peterborough, into the river Witham, three miles below Lincoln, was intended for inland navigation: this canal is about forty miles in length, and muſt have been originally very deep, though now almoſt filled up[30]. It is ſuppoſed to have been a work of the Romans. No trace of further exertion in this department appears, till the year 1608, when the canal, or rather aqueduct, called the New River, was projected and begun by Sir Hugh Middleton: it was finiſhed in five years, and winds through a long courſe from Ware in Hertfordſhire, to the grand ciſtern of Iſlington. But, in fact, the earlieſt inland navigation that can be authenticated, is the Sankey canal, leading from the coal-pits at St. Helen's, in Lancaſhire, to the River Merſey, and conſtructed in order to convey coals to Liverpool[31]. The length of the canal is twelve miles, with a fall of ninety feet. The act of parliament paſſed in 1755; the original intention was only to render the rivulet called Sankey Brook, navigable; but it was found more advantageous to form a canal along its courſe. The ſurveyor was Mr. John Eyes. Inland Navigation.

But the Duke of Bridgewater is juſtly venerated as the grand founder of inland navigation: his ſpirit and opulence were happily ſeconded by Brindley, than whom a greater natural genius in mechanics never exiſted. It was in the year 1758 that the firſt act was obtained for theſe great deſigns. The firſt canal extends from Worſley mill, about ſeven computed miles from Mancheſter, and reaches that town by a courſe of nine miles, a circuit of two miles being neceſſary for the ſake of the level. In this ſhort ſpace almoſt every difficulty occurred that can ariſe in ſimilar ſchemes; but mountains and rivers yielded to the genius of Brindley. There are ſubterraneous paſſages to the coal in the mountain, of near a mile in length, ſometimes cut through the ſolid

[30] Philips, Hiſt. of Inland Navigation, 1795, 4to, p. 72. [31] Ibid. Addenda 29.

rock,

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rock, and occaſionally arched over with brick; with air-funnels to the top of the hill, ſome of them thirty-ſeven yards perpendicular. This beautiful canal is thrown over the river Irwell, by an arch of thirty-nine feet in height, and under which barges paſs without lowering their maſts. Yet the expence of this noble canal, in the then comparatively cheap ſtate of labour and proviſions, was only computed at 1000 guineas a mile. The various machines and inventions of Brindley, for its conſtruction and preſervation, deſervedly excite wonder, but a detail cannot be here expected. The Duke of Bridgewater ſoon afterwards extended a canal of twenty-nine miles in length, from Longford bridge, in Lancaſhire, to Hempſtones in Cheſhire.

After this deſerved tribute to the fathers of inland navigation in England, it will be eligible to review the other canals in a geographical manner, proceeding from the north to the ſouth. In the county of Durham, a canal was projected by Brindley, from the romantic village of Winſton, on the river Tees to Staindrop, and thence by Darlington to Stockton: but this deſign, and others not yet carried into execution, ſhall be paſſed over, and only the moſt important of thoſe which have been executed ſhall be commemorated.

Firſt in order is the Lancaſter canal, extending from Kendal, in Weſtmoreland, by Lancaſter, to Weſt Houghton, in Lancaſhire, a ſpace of about ſeventy-four miles.

The canal from Leeds to Liverpool, directed in a northerly courſe by Skipton, winds through an extent of 117 miles; and from this canal a branch alſo extends to Mancheſter, begun in 1771.

From Halifax to Mancheſter is another conſiderable canal, commonly called that of Rochdale; length thirty-one miles and a half, begun in 1794.

Another canal extends from Mancheſter towards Wakefield; and another called the Peak Foreſt canal, ſtretches from the former, ſouth-eaſt, about fifteen miles.

Another joins the River Dun, ſeveral miles above Doncaſter, to the River Calder, near Wakefield.

To paſs ſeveral of ſmaller note, the Cheſterfield canal extends from Cheſterfield, in the county of Derby, to the Trent at Stockwith, a courſe of forty-four miles and three quarters, begun in 1770.

In Lincolnſhire, one canal extends from Lincoln to the Trent, and another from Horncaſtle to Sleaford. Grantham canal reaches from that town to the River Trent, a courſe of thirty miles.

The grand deſign of Brindley was to join, by inland navigation, the four great ports of the kingdom, Briſtol, London, Liverpool, and Hull. Liverpool is accordingly connected with Hull by a canal from that long navigable river the Trent, and proceeding north to the Merſey. The canal which joins theſe two rivers is ſtyled the Grand Trunk; and was begun in 1766, under the direction of that great engineer; but was not completed till 1777; the length is 99 miles. It was attended with great difficulties, particularly in paſſing the river Dove, in Derbyſhire, where there is an aqueduct of twenty-three arches, the tunnel through the hill of Hare-caſtle, in Staffordſhire, is in length 2880 yards, and more than 70 yards below the ſurface of the ground, and was executed with great labour and expence [32]. But the utility correſponds with the grandeur of the deſign: ſalt from Cheſhire, coals and pottery from Staffordſhire, and manufactures from various places, are tranſported on this canal.

From the Grand Trunk five or ſix branches extend in various directions: among which muſt not be omitted that to the River Severn, near Bewdley, which connects the port of Briſtol with thoſe of Liverpool and Hull; the length is 46 miles; completed in 1772.

From the city of Cheſter one canal extends to the Merſey, and another to Nemptwich; another proceeds ſouth to Shrewſbury, uniting the Merſey and the Severn; with north-weſt, and ſouth-eaſt branches of conſiderable length.

From Coventry, in the centre of the kingdom, canals extend to the Grand Trunk; to Aſhby-de-la-Zouch, and to the Braunſton, or Grand Junction Canal.

[32] Cary's Plans, p. 26, 27, 28. The account of the Grand Trunk in Philips, is very defective; he may here be referred to in general for the others. See alſo Houſman, 122.

What

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What is called the Staffordſhire canal, extends from the Grand Trunk to the River Severn; and is met by the Kington canal, which reaches to Kington, in Herefordſhire, ſo as almoſt to join the Rivers Trent and Wye. It may be here obſerved, that in this deſcription the grand courſes of navigation are attended to, rather than the minute names and diviſions of the canals.

Several inland navigations paſs by Birmingham. The Union canal completes a courſe of forty-three miles and three quarters, from Leiceſter to Northampton, whence the river Nen is navigable to the ſea.

Another canal extends from Glouceſter to Hereford: and the ſouth of Wales preſents ſeveral navigations of conſiderable length, particularly that from Brecon, in Brecknockſhire, to Newport in Monmouthſhire.

The Severn is not only joined with the Trent and the Humber, by various courſes of navigation, but is united with the Thames, by a canal extending by Stroud to Lechlade, a courſe of near forty miles.

Other canals branch out from the Thames in various directions: that of Oxford extends to the Grand Trunk, or rather joins the Coventry canal, after a courſe of ninety-two miles.

The Braunſton, or Grand Junction canal, reaches from Brentford, on the Thames, and joins the Oxford canal at Braunſton, in Northamptonſhire, after a courſe of ninety miles. It is ſtyled the Grand Junction, becauſe it may be ſaid to unite the numerous courſes that pervade the central counties, with the capital of the kingdom.

On the ſouth of the Thames, a canal proceeds from Reading to Bath; and another from Weybridge to Baſingſtoke; and a third from Weybridge to Godalming.

A ſmall canal or two have been executed in Devonſhire. The Andover canal, in Hampſhire, extends from Andover to Southampton water. Suſſex preſents two canals, that of Arundel, and that of Lewes.

When we reflect that all theſe laudable efforts of improvement and civilization, have been executed within theſe forty years, there is room

room for well-grounded hopes, that in the courſe of centuries the kingdom may be interſected, like another China, with innumerable canals, to the inconceivable advancement of agriculture, commerce, and the national induſtry and proſperity. The ſum already expended in theſe noble works, has been computed at five millions and a half; but how much more uſefully employed, than in fruitleſs wars, which conſume fifty millions in one year!

INLAND NAVIGATION.

The Manufactures and commerce of England, form ſo extenſive a theme, that only a brief and fugitive idea of them, can be here attempted. The earlieſt ſtaple commodity of England was tin, a metal rarely found in other countries. The Phœnicians firſt introduced it into commerce, at leaſt five or ſix hundred years before the Chriſtian æra; and their extenſive trade ſoon diffuſed it among the Oriental nations. The Romans, upon their conqueſt of theſe regions, did not neglect this ſource of wealth; but as Cornwall was not conquered by the Anglo-Saxons, till the reign of Athelſtan, we know not whether the Corniſh Britons carried on any conſiderable traffic in this commodity, though it be probable that it was at leaſt exchanged for the wines of France. Yet even in the reign of John, the product was ſo inconſiderable, that the mines were farmed to Jews for 100 marks; but in that of Henry III, they began again to yield a large profit, which has gradually increaſed [33].

Manufactures and Commerce.

Cornwall, like moſt countries that abound with minerals, preſents an external aſpect of deſolation: a ſeries of barren hills, and bleak heaths, pervades its whole length; and the violent winds from the ſea check the vegetation of trees and ſhrubs. The tin mines are numerous, and of various deſcriptions. This metal is either found in the maſs, in what are called *lodes* and *ſtools*; or in grains, or bunches, in the rocks; or detached in ſeparate ſtones, called *ſhodes* or *ſtrings*; or in a courſe of ſuch ſtones called the *beubeyl* or *living ſtring*; or in the pulverized ſhape of ſand. After having been pounded in a mill, it is melted into blocks of 320 pounds weight. In the ore it is ſtyled black tin; but is ſometimes, though very rarely, found in a metallic ſtate.

[33] Borlaſe's Cornwall.

MANUFACTURES AND COMMERCE.

The ſingularity and importance of this firſt national ſtaple, may apologize for this diſcuſſion; but the abundance of the other topics will require more brevity. Wool had been regarded as a grand ſtaple of England, as early as the twelfth century, but was chiefly exported in a crude ſtate, till Edward III encouraged ſettlements of Flemiſh manufacturers. Wool ſoon became the ſtandard of private property, and the prime article of commerce. Taxes and foreign ſubſidies were eſtimated by ſacks of this commodity *. Great quantities of raw wool continued to be exported to the Netherlands and Hanſe Towns; but in the reign of Elizabeth it began to be chiefly manufactured at home, and the exportation of woollen cloths was then valued at a million and a half annually. The exportation of raw wool was at length prohibited; and the woollen manufactures preſerve great importance, though they no longer attract ſuch particular regard, amidſt the exuberance of Engliſh manufactures.

In recent times, the manufactures of iron and copper, native minerals, have become great ſources of national wealth; nor muſt the new and extenſive exportation of elegant earthen-ware be forgotten. The cotton manufacture is diffuſed far and wide, forming a grand ſource of induſtry and proſperity. That of linen is not much cultivated in England, though nature would rather demand that flax ſhould be cultivated in this fertile country, while ſheep and wool were reſtricted to the hilly paſtures of Scotland. The manufactures of glaſs and fine ſteel, clocks, watches, &c. are deſervedly eminent and extenſive. As the nation is indebted to Wedgewood for converting clay into gold, ſo to Boydell for another elegant branch of exportation, that of beautiful prints.

Beſides manufactured articles, England exports a number of native products too numerous to be here mentioned.

The Engliſh manufactures have been recently eſtimated at the annual value of 63,600,000*l.* and ſuppoſed to employ 1,585,000 perſons [33]. Of theſe the woollen manufacture is ſuppoſed to yield in round ſums,

* Campbell's Political Survey, vol. ii. p. 151, 152. A work opulent in materials, but of moſt tedious and uncouth execution.

[33] Mr. Grellier, in the Monthly Mag. January 1801.

15,000,000*l.*

15,000,000*l.* the leather 10,000,000*l.* the iron, tin, and lead 10,000,000*l.* the cotton 9,000,000*l.* The other chief manufactures, which yield from 1 to 4,000,000*l.* may be thus arranged, according to their conſequence, ſteel, plating, &c. copper and braſs, ſilk, potteries, linen and flax, hemp, glaſs, paper.

The Commerce of England is, at the preſent period, enormous, and may be ſaid to extend to every region of the globe. It was conceived that the defection of the American colonies, would have proved detrimental in this view; but the commercial conſequences have been little important. The trade with the Weſt Indies furniſhes another grand reſource; and that with the Eaſt Indies alone, would have aſtoniſhed any of the celebrated trading cities of antiquity. The following table will preſent a more complete view of the ſubject, than could otherwiſe be conveyed. It relates ſolely to the port of London for one year, ending 5th of January, 1795, ſince which the commerce has increaſed.

Names of the Countries.	Value of Imports into London.			Value of Exports from the Port of London, to Foreign Parts.					
				British Manufactures.			Foreign Merchandize.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
Ireland	2,209,501	3	4	168,687	18	3	914,352	4	4
Britiſh Weſt Indies	6,072,117	5	0	2,249,043	13	11	579,453	6	0
Conquered Iſlands	1,226,064	13	8	260,976	0	11	110,817	18	0
Britiſh American Colonies	307,412	13	0	654,842	19	4	251,551	6	2
Guernſey and Jerſey	91,936	1	2	12,001	13	10	21,616	16	8
Gibraltar	12,947	16	8	83,473	14	11	69,315	2	8
Honduras Bay	14,696	4	2	2,029	18	11	2,550	16	2
South Fiſhery	197,680	8	6	21	6	8	--	--	—
Aſia, including Eaſt Indies	8,916,950	2	10	3,398,680	1	4	185,190	16	0
Africa	66,013	8	4	90,593	12	9	188,743	16	6
Turkey	641,860	19	2	32,065	12	0	123,776	7	2
Streights	8,399	14	0	--	--	--	--	--	--
Venice	82,107	16	0	6,203	17	11	16,305	7	2
Italy	1,215,012	15	0	80,980	18	9	340,786	0	8
Spain	1,070,697	18	0	205,096	4	4	265,169	3	4
Portugal	644,600	3	8	182,780	6	2	119,813	12	6
Madeira	7,479	16	8	27,998	6	10	6,886	18	2
Canaries	6,763	19	10	20,116	18	4	377	5	2
France	130	6	8	3,216	5	3	63,625	10	6
Auſtrian Flanders	137,249	5	0	129,413	9	7	887,642	18	10
Carried forward	22,929,632	10	8	7,608,223	0	0	4,147,975	6	0

0 2 Holland

COMMERCE.

Names of the Countries.	Value of Imports into London.	Value of Exports from the Port of London, to Foreign Parts. British Manufactures.	Foreign Merchandize.
	£. s. d.	£. s. d.	£. s. d.
Brought forward	22,929,632 10 8	7,608,223 0 0	4,147 975 6 0
Holland -	1,203,515 3 6	114,458 3 7	1,968,687 3 4
Germany -	1,089,307 19 4	1,044,634 18 0	6,176,100 14 8
Pruſſia - -	196,657 3 2	54,380 14 0	272,719 17 4
Poland - -	104 978 10 4	7 022 11 10	57,067 2 4
Sweden - -	262,727 3 4	33,845 5 6	111,457 14 4
Ruſſia - -	1,269,688 9 6	95 519 8 8	491,244 9 2
Denmark and Norway	166,366 1 0	147,340 5 11	545 509 19 8
Greenland - -	26,753 11 2	— — —	— — —
United States of America	811,511 18 8	2,351,280 12 1	429 248 7 8
Florida - -	16 239 16 0	38,067 0 3	8,855 0 0
Foreign Weſt Indies	56 240 2 0	1,767 13 10	60 0 0
Prize Goods -	1,572,868 8 8		Included in the account of each country.
	29,706,476 17 4	11,396,539 13 8	14,208,925 14 6

RECAPITULATION.

The aggregate value of goods imported into London in one year			29,706,476 17 4
Britiſh Manufactures exported	£. 11,396,539 13 8		
Foreign Merchandize, do.	14,208,925 14 6		
			25,605,465 8 2
Value of goods imported in upwards of 9000 coaſting veſſels, averaged at 500*l.* each.	4,500,000 0 0		
Value of goods exported coaſtways in about 7000 veſſels, at 1000*l.* each -	7,000,000 0 0		
			11,500,000 0 0
Total amount of property ſhipped and unſhipped in the River Thames, in the courſe of a year, eſtimated at - - -			66,811,942 5 6

If to this eſtimate be added thoſe of the ports of Liverpool, Briſtol, &c. how enormous muſt be the amount [34].

From the States of North America, are chiefly imported tobacco, rice, indigo, timber, hemp, flax, iron, pitch, tar, and lumber: From the Weſt Indies, ſugar, rum, cotton, coffee, ginger, pepper, guaiacum, ſarſaparilla, manchineal, mahogany, gums, &c. From Africa, gold duſt, ivory, gums, &c. From the Eaſt Indies and China, tea, rice, ſpices,

[34] Colquhoun (or Cohoun) on the Police.

drugs,

drugs, colours, ſilk, cotton, ſalt-petre, ſhawls, and other products of the loom. From our remaining ſettlements in North America, are imported furs, timber, pot-aſh, iron; and from the various States of Europe, numerous articles of utility, and luxury. COMMERCE.

On introducing the Income Tax, Mr. Pitt gave the following eſtimate of the annual income of Great-Britain [35].

The land rental, after deducting one-fifth	£. 20 000,000
The tenant's rental of land, deducting two-thirds of the rack-rent	6,000,000
The amount of tythes, deducting one fifth	4,000,000
The produce of mines, canal navigation, &c. deducting one fifth	3 000,000
The rental of houſes, deducting one-fifth	5 000 000
The profits of profeſſions	2 000,000
The rental of Scotland, taking it at one eighth of that of England	5,000,000
The income of perſons reſident in Great Britain, drawn from poſſeſſions beyond the ſeas	5 000 000
The amount of annuities from the public funds, after deducting one-fifth for exemptions and modifications	12 000,000
The profits on the capital employed in our foreign commerce	12,000,000
The profits employed on the capital in domeſtic trade, and the profits of ſkill and induſtry	28,000,000
In all	£. 102,000,000

By others, the landed property of Great-Britain has been computed at the rental of 33,000,000*l.* which, at thirty years purchaſe, would yield 990,000,000*l.*; the rental of houſes in England and Wales [36], at 7,436,000*l.* and eſtimating that of Scotland at about a ſixth, the value at fifteen years purchaſe, might be about 130,000,000*l.* The cattle and farming-ſtock, about 100,000,000*l.* the furniture, apparel, &c. 26,000,000*l.* The navy and merchant-ſhips have been valued at 16,000,000*l.*; the goods in the hands of merchants and wholeſale dealers, more than 13,000,000*l.* and thoſe in the hands of manufacturers and retail traders, more than 22,000,000*l.* Including the money, of which the eſtimate is far from certain, the whole capital of Great-Britain may be calculated at more than one thouſand, two hundred millions *.

[35] New Annual Regiſter, for 1799, p. 114. [36] Grellier, Month. Mag. Sept. 1800.

* In the beginning of the eighteenth century, Gregory King ſuppoſed the value of England and Wales to be 650,000,000*l.* MS. Harl. No. 1,898. The national debt now approaches 500,000,000*l.*

In

COMMERCE. In the year 1797, the amount of the exports, according to Cuſtom-houſe accounts, was 28,917,000*l.* and of the imports, 21,013,000*l.* *, yielding, as is ſuppoſed, clear profits on foreign trade, to the amount of at leaſt 10,000,000*l.* The number of merchant veſſels is ſuppoſed to amount to 16,000; and it is ſuppoſed that 140,000 men and boys are employed in the navigation.

* Mr. Pitt in 1799, computed the imports at 25, and the exports at more than 33,000,000*l.* In Feb. 1801, the foreign exports at 17, the domeſtic 20,000,000*l.* in all 37,000,000*l.*

CHAPTER IV.

Natural Geography.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

Climate and Seasons.

THE climate of Great-Britain is perhaps more variable than that of any other country on the globe, as the vapours of the Atlantic Ocean, are oppoſed to the drying winds from the Eaſtern Continent. The weſtern coaſts in particular, are ſubject to frequent rains; and the eaſtern part of Scotland is of a clearer and dryer temperature than that of England. The humidity of the climate, indeed, clothes the delicious vales and meadows with a verdure unknown to any other region; but is injurious to the health of the inhabitants, by cauſing colds and catarrhs, the frequent ſources of more deadly diſorders, particularly of conſumptions, which are fatal to many in the prime of youth. The moiſt and foggy climate conſpires with the great uſe of groſs animal food, to produce that melancholy, which is eſteemed by foreigners a national characteriſtic. As trees particularly attract the moiſture of the atmoſphere; it may be queſtioned whether the noted abundance of them in England, contribute to the general ſalubrity.

In conſequence of the mutability of the climate, the ſeaſons themſelves are of uncertain tenour. Aged people have always been given to magnify the advantages of their youth, but many obſervers, endowed with philoſophical ſkill, and candid judgment, have agreed, that ſince the year 1775, a conſiderable change has taken place in the temperature of the year, both in Great Britain and Ireland[1]. The winters in general have been more moiſt and mild, and the ſummers more humid and more cold, than will be found on an average of preceding

[1] See Memoirs of the Iriſh Academy, vol. ii.

Climate and Seasons.

years. The year might more properly be divided into eight months of winter, and four of ſummer; than into any theoretic arrangement, originating in the ſouthern latitudes. What is called the Spring, dawns in April, commonly, indeed, a mild month; but the eaſtern winds prevalent in May, ſeem commiſſioned to ruin the efforts of reviving nature, and deſtroy the promiſe of the year. June, July, Auguſt and September, are uſually warm ſummer months; but a night of froſt is not unknown, even in Auguſt, and ſometimes a cold Eaſt wind will blow for three days together; nor of late years are ſummers unknown of almoſt conſtant rain *. What the gardeners call *blight*, ſeems alſo more common in England than in any other region; and whatever be the cauſe, is frequently very deſtructive, eſpecially to the hop-plants and the fruit trees. The winter may be ſaid to commence with the beginning of October, at which time domeſtic fires become neceſſary; but there is ſeldom any ſevere froſt till Chriſtmas, and January is the moſt ſtern month of the year. Yet, as our ſummers often produce ſpecimens of winter, ſo now and then gleams of warm ſunſhine illuminate the darker months, though rarely amounting to what the French call *un eté de St. Martin*, or Martinmas ſummer. March is generally the moſt unſettled month of the year, interſperſed with dry froſt, cold rains, and ſtrong winds, with ſtorms of hail and ſleet.

Face of the Country.

A chief ſtep to the ſtudy of Geography, conſiſts in the knowledge of what may be termed the phyſiognomy of the country, yet has no province in this ſcience being ſo completely neglected. We have even maps of Scotland and Switzerland, without mountains, and maps of China without canals. The chief features of any country are its hills, vales, and rivers; and of a maritime ſtate, the ſea-coaſt. Mr. Pennant, in his Arctic Zoology, has given an admirable deſcription of part of the Engliſh ſhores, which ſhall here be abbreviated, with an alteration in the arrangement, as he chooſes to begin with the Streights of Dover.

From the mouth of the Tweed to Bamborough, extends a ſandy ſhore; and the moſt remarkable object is Lindesfarn, or Holy Iſland, divided from Northumberland by a level, which is dry at low water,

* The ſummer of 1800 was remarkable for dryneſs and warmth, ſcarcely any rain falling from the 6th of June to the 20th of Auguſt, when a thunder ſtorm ſucceeded.

but

but out of which the flowing tide oozes ſuddenly, to the terror and peril of the unwary traveller. From Bamborough Caſtle, to Flamborough-head, are moſtly low cliffs, of lime-ſtone, and other materials; and at Sunderland of a peculiar ſtone uſed in building, and which ſeems the work of marine inſects. Scarborough ſtands on a vaſt rock, projecting into the waves; but Flamborough-head is a far more magnificent object, being formed of lime-ſtone, of a ſnowy whiteneſs, and ſtupendous height, viſible far off at ſea. Grand caverns open on the north ſide, "giving wide and ſolemn admiſſion, through moſt exalted "arches, into the body of the mountain; together with the gradual "decline of light; the deep ſilence of the place, unleſs interrupted by "the ſtriking of the oar, the colliſion of a ſwelling wave againſt the ſides, "or the loud flutter of the pigeons, affrighted from their neſts in the "diſtant roof, afford pleaſures of ſcenery, which ſuch formations as "this alone can yield. Theſe alſo are wonderfully diverſified. In "ſome parts the caverns penetrate far, and end in darkneſs; in others "are pervious, and give a romantic paſſage by another opening, equally "ſuperb. Many of the rocks are inſulated, of a pyramidal form, and "ſoar to a great height. The baſes of moſt are ſolid, but in ſome "pierced through and arched. All are covered with the dung of the "innumerable flocks of migratory birds, which reſort here annually "to breed, and fill every little projection, every hole, which will give "them leave to reſt[z]."

FACE OF THE COUNTRY.

Hence to the Humber are commonly clay cliffs; and near Spurn-head amber is ſometimes found. The extenſive coaſt of Lincolnſhire is flat, and, according to Mr. Pennant's opinion, has been gained from the ſea; though, in ſome parts, the ſea has in its turn invaded the land, and the remains of a foreſt are viſible under the waves. The county of Lincoln, and part of ſix others, are the low countries of Britain; and the coaſt is diſtinguiſhable by churches, not by hills. The ſhores of Norfolk and Suffolk preſent ſometimes loamy or clayey precipices, ſometimes hillocks of ſand, and ſometimes low and flat ſpaces. Hunſtanton-cliff riſes to the height of about eighty feet, compoſed of chalk

[z] Pennant's Arctic Zoology, vol. i. p. xv.

Face of the Country.

and friable ſtone, reſting on a baſe of what is called iron-coloured pudding ſtone *, projecting into the ſea. The coaſt of Eſſex is generally low; but to the ſouth of the Thames, ariſe continued cliffs of chalk, with layers of flint, reſembling maſonry. The North Foreland is a lofty chalky promontory; and the Cliffs of Dover are known to every reader of Shakeſpeare.

It is to be regretted that Mr. Pennant did not extend his animated deſcription to the ſouthern and weſtern coaſts: cliffs of chalk and clay are interſperſed with flat gravel, till the Iſland of Portland preſents its bold rocky front. The weſtern ſhores abound with granite, and other ſiliceous rocks.

Soil and Agriculture.

The ſoil and agriculture of England, are topics which have recently been illuſtrated in ſuch a multiplicity of meritorious works, that the ſubject labours under the abundance of the materials. A few very general remarks muſt here ſuffice. The ſoil is greatly diverſified, but in general fertile; and in no country is agriculture more thoroughly underſtood, or purſued in a grander ſtyle, except, perhaps, in Flanders and Lombardy. The nobility and gentry, moſtly reſiding upon their eſtates in ſummer, often retain conſiderable farms in their own hands, and practiſe and encourage every agricultural improvement. The writings of Mr. Young, the inſtitutions in the weſt, and the Board of Agriculture, recently erected, have contributed to diffuſe a wide and laſting knowledge of this intereſting branch. The intermixture of the green crops with thoſe of grain, the uſe of turnips, the irrigation of meadows, the regular ſubſtitution of crops appropriated to the ſtate of the land, the art of draining conducted on ſcientific principles, may be mentioned among the recent advances of knowledge; nor muſt the improvements in the breed of ſheep and cattle, introduced by Bakewell and others, be forgotten.

Amidſt ſuch topics of juſt exultation, it is mortifying to reflect upon two circumſtances, the deficiency of a proper ſupply of grain, and the immenſe extent of the waſte lands in this induſtrious country. The cultivated acres in England and Wales are computed at upwards of 39,000,000, while thoſe uncultivated are 7,888,777. Of theſe it is

* The *farſilite* of Kirwan from the Latin: better from the Greek, *halleſite*.

 ſuppoſed

Soil and Agriculture.

ſuppoſed that not above half a million is wholly unimprovable, and perhaps a million is only fit for plantations, while of the remainder one quarter is fit for tillage, and three fourths for meadow and upland paſture[3]. Mr. Middleton[4] computes the arable land in South Britain at only 14,000,000 of acres, upon a general view of the conſumption of the country, as we import corn proportionate to the produce of 378,000 acres. He ſuppoſes the ſtate of crops on each 10,000,000 of acres to be as follows :

Wheat	2,750 000	Acres.
Oats and beans	2.500 000	
Barley and Rye	750,000	
Roots	1,000,000	
Clover	1,000,000	
Fallow	2,000,000	
Total	10,000,000	

The utility of fallow is a dubious topic ; and the million in clover may be arranged as paſturage, which otherwiſe occupies not leſs than 21,000,000 of acres, while 2,000,000 are aſſigned to woods, copſes, and hedge-rows[5] ; and more than 1,500,000 are unavoidably conſumed in roads, rivers, and waters, &c. The ſubject can only be well diſcuſſed by the moſt competent judges; but it may be curſorily obſerved, that as the radical error of French agriculture, was an exceſs of land under grain, whence there was a deficiency of paſture, of cattle, and conſequently of manure, ſo that the arable ground was ſtarved ; ſo in England there may, perhaps, be an exceſs of paſturage. Whatever be the cauſes, a growing population, certainly increaſing luxury and waſte, the neglect of the waſte lands, or other ſources, the conſumption of grain in this country, has, it is believed, ſince the middle of the laſt century, particularly ſince 1767, generally exceeded the produce ; and the evil has gradually increaſed to an alarming extent. On an average of eleven years, cloſing with 1793, the annual deficiency amounted to 587,163 quarters of grain[6] ; nay, in 1795, the ſcarcity demanded a ſtill further ſupply of 1,177,000 quarters ; which alſo, divided by 11, will

[3] Firſt Report of the Committee of the Houſe of Commons, p. 22.
[4] View of Middleſex, p. 484. [5] Ib. 486. [6] Ib 481.

produce

Soil and Agriculture.

produce the whole annual defect of 694,163 quarters. Computing produce at three quarters an acre, the land required, exclusive of the seed, would be 231,388 acres cropped with corn; while about half as much must be added for fallow and the rotation of crops. For an abundant supply 500,000 of acres might be requisite, which might seemingly be assumed with little difficulty from at least 1,500,000 waste acres in South Britain, which are fit for tillage. Yet this calculation would infer that the deficiency does not exceed the twenty-eighth part of the whole, which seems too small, as the bread has been doubled in price; and, indeed, these theoretic views can never pretend to much exactness. If South Britain annually produce 11,500,000 quarters of wheat, the deficiency can hardly be supposed less than a tenth part. Scarcity, indeed, multiplies the consumption, as the poor are reduced to the use of bread only; but still the rise in the price of that article, appears to exceed any fair calculation.

Horticulture, or the art of gardening, is also pursued in England with great assiduity and success. The large supply of the capital in vegetables and fruits, and the high prices given for early produce, occasion such a spirit of cultivation, that each acre thus employed, is supposed to yield about 120*l.* annually, the consumption in the metropolis being computed at more than 1,000,000l. annually. While Mr. Middleton computes the hop-grounds in South Britain at 44,000 acres, he allows 10,000 for nursery grounds, 50,000 for fruit and kitchen gardens, and 20,000 for pleasure-grounds, that is, the unprofitable parts of the latter, the rest being pastured for cattle, or mown for hay. Of ornamental gardens, laid out with a just attention to the beauties of nature, and free from the uncouth affectations of art, England is deservedly regarded as the parent country[7]. The first idea has been referred to Milton's description of Eden; and a paper in the Guardian is supposed to have induced Bridgman, a fashionable designer of gardens, to begin this reform, which was successfully followed by Kent, while the Duke of Argyle introduced the various foliage of exotic trees. One of Kent's best works was the garden at Rousham, while Claremont, Esher, and other places, also proclaim the extent of his powers. The

[7] Lord Orford on Modern Gardening.

new

new deſigns were ſeconded by ſeveral gentlemen of taſte; and Kent was followed by Brown, who has been ſucceeded by Repton, and other maſters of great abilities. In the courſe of little more than half a century, this taſte has not only been diffuſed in Great Britain, but has been imitated in ſeveral favourite ſpots on the Continent, even as far as the rude climate of Ruſſia. SOIL AND AGRICULTURE.

But the rivers and mountains of a country conſtitute its moſt important features; and without juſt delineations of them, the geographical portrait cannot boaſt much truth or reſemblance. England is interſected by four important rivers, the Severn, the Thames, the Humber, and the Merſey. The Severn riſes from the mountain Plenlimmon, and after an eaſterly courſe to Shrewſbury, bends its progreſs almoſt ſouth to Glouceſter, whence it flows ſouth-weſt into the Briſtol Channel, a progreſs of about 150 miles, navigable as far as Welch-pool. Its chief tributary ſtreams are the Northern and Southern Avons, the Teme and the Wye[8]. Rivers. Severn.

The Thames originates in Cotſwold-hills, Glouceſterſhire; and maintains a ſouth-eaſterly direction, to its egreſs into the German Ocean, after receiving the Cherwel, the Teme, the Kennett, another Wye, the Mole, and Lee. The Medway flows into the eſtuary of the Thames, as the Wye into that of the Severn. The courſe is computed at 140 miles, navigable to Cricklade[9]. Thames.

The Humber is a name almoſt confined to a large eſtuary, which receives many conſiderable rivers that fertilize the central parts of England. Of theſe the Trent is the moſt important, which riſes at New-pool, in Staffordſhire, and proceeding North-eaſt, enters the Humber, after a direct courſe of about 100 miles, being navigable to Burton in Staffordſhire. The other principal rivers that iſſue into the Humber, are the Dun, a navigable ſtream which runs by Doncaſter; the Aire navigable to Leeds, and the Calder navigable to Halifax, both ſingularly uſeful in tranſporting the woollen manufactures; the Warf, navigable to Tadcaſter; and the noble river Ure, or Ouſe, which runs by York, and forms another grand branch of the Humber.

[8] Campbell, I. 146. [9] Ibid. I. 139.

Rivers. Humber, navigable to Rippon: nor muſt the Derwent be omitted, which is navigable to New Malton; nor, though laſt and leaſt, the Hull. The Humber may be regarded as the ſtem of a venerable oak, which, as uſual with that tree, ſpreads its chief branches in a horizontal direction.

Merſey. Though the Merſey preſent a grand eſtuary, its courſe is not of great extent. It ariſes in the Weſt Riding of Yorkſhire, and runs to the ſouth-weſt; but the eſtuary bends towards the north. The direct courſe is not above 50 miles; and is navigable to Stockport: as the Irwell to near Mancheſter, and the Weever to near Northwich, and the mines of rock-ſalt.

In briefly deſcribing the other navigable rivers of this kingdom, it may be proper to return to the Severn, and proceeding ſouth-weſt, purſue the outline of the coaſt. The Avon is navigable to Bath, the Perrot to Ilcheſter, the Tone to Taunton, the Taw to Barnſtaple, and another branch to Biddeford; the Camil of Cornwall, to Wedbridge, while the Plym, Dart, and Ex, can alſo be pervaded to a conſiderable height. Another Avon is navigable to near Saliſbury, the Itchyn to Wincheſter, the Arun to Arundel, the Ouſe to Lewes: the Rother, which forms the haven of Rye, is yet navigable, though fallen in fame. The Stour admits boats even to Canterbury; but the Medway preſents a navigable ſtream as far as Tunbridge. On the north of the Thames, the Lee is navigable to Biſhop's Stortford and Hertford: the Crouch conveys boats from the ſea to Hull-bridge in Eſſex; the Black-water to Chelmsford, and another branch to Colcheſter. The Stour is navigable to Sudbury; the Orwell to Stow, the Deben to Woodbridge: the Yare and Waveney preſent acceſs to Foulſham and Bungay. Next is the eſtuary called the Waſh, which receives the Ouſe, the Nen, the Welland, the Witham, all ſtreams of conſiderable navigation.

On the North of the Humber, the Tees admits veſſels to Stockton; the Tyne to Newcaſtle. On the Weſt, the Eden is navigable to Carliſle; the Lon to Lancaſter and Hornby; the Dee to Cheſter; the Conway to within two miles of Llanrwſt; the Tivey to Llanpiter. Milford Haven preſents branches navigable to Haverford-weſt, and to near

near Wiſton: and laſtly, the Wye may be purſued as far as Hay, in Brecknockſhire. Rivers.

In general it may be obſerved of the Britiſh rivers, that the length of their courſe is inconſiderable, when compared with that of the Continental ſtreams. The length of the Thames compared with that of the Danube, is only as 1 to 7, and with that of the Nile, as 1 to 12. The Kian Keu of China, and the river of Amazons in South America, extend through a progreſs of more than fifteen times the length of that of the Thames. The rivers of the Southern and middle parts of England, preſent a ſtriking contraſt to thoſe of the North; the former purſuing a ſlow and inert courſe over mud, between level banks, amid rich and extenſive meadows; while the latter roll their clear torrents over beds of gravel, between elevated banks, and rocky precipices; and even when verdant levels occur, the ſtream ſtill retains its banks and beds of gravel.

The mountains form another grand feature of geography. They ſeldom appear ſingle, but are either diſpoſed in lines or ridges, called chains, or in anomalous cluſters. When they can be arranged under the firſt form or denomination, as the Alps for example, or the Pyrenees, they afford great clearneſs to geographical limits and deſcriptions. It is not, however, to be conceived, that a chain of mountains forms one ſeries, as delineated in ſmall maps, for the leading ſummits diverge on both ſides into extenſive ribs, gradually melting into the champaign country. And the cluſters, if accurately ſurveyed, will generally be found to preſent central elevations, whence ſmaller branches irradiate. Mountains.

While Bennevis, the higheſt mountain in Scotland, is not much above one quarter of the height of Mont Blanc, the ſovereign of the Alps, the Engliſh and Welch ſummits aſpire to heights ſtill leſs conſiderable; Snowden being only 3568 Engliſh feet above the ſea, while Bennevis is 4387, or by other accounts, 4350. But Wharn, or Wharnſide, in Yorkſhire, was eſtimated at 4050 *.

Even

* In the map of the Weſt Riding, in Cary's Engliſh Atlas, Wharn is ſaid to be 1780 yards, or 5340 feet; while Ingleborough is 1760 yards, or 5280 feet; and Pennigant 1740 yards, or 5220 feet. This meaſurement is from the map of Yorkſhire, by Jeffries.

Mr.

Mountains. Even at the preſent day, the geography of ſome parts of New Holland, is better underſtood than that of ſome parts of Great Britain. There is not even a ſeparate map of the Engliſh rivers, though France ſet an example of this kind, a century and a half ago; nor has there

Mr. Houſman, in his Deſcription of Cumberland, &c. (Carliſle, 1800, 8vo.) is the moſt recent authority for the height of the Britiſh mountains, which he exhibits in the following table:

"*Heights of the Mountains above the Level of the Sea.*

	Feet.
Snowden, in Wales, by Waddington	3456
Whernſide Do.	4050
Pendle hill Do.	3411
Pennygent Do.	3930
Ingleborough, Do.	3987
Helwellyn, by Donald	3324
Skiddaw, Do.	3270
Croſs-fell, Do.	3390
Saddleback, Do.	3048
Benlomond	3240
Beneviſh	4350
Ben-y-bourd higher } By Pennant.	
Laghin-y-gair }	
Benwewiſh, } Perpetual ſnow.	
Skiddaw, by the experiments of Mr. Walker, from the plane of the ſea, at Whitehaven	3530
Croſs-fell, by Pennant	3839"

But great ſkill and preciſion are required in meaſuring the heights of mountains. A late excellent mathematician, Mr. Ewart, of Lancaſter, meaſured the height of Ingleborough, with ſelect and high priced inſtruments, and great care. Here is the reſult, as communicated to me by Dr. Garnett:

Height of Ingleborough above the level of the Sea, in feet and decimals.

By barometrical admeaſurement	2377,12
By trigonometrical	2380 79
Difference only	3,67

Wharn cannot be above 100 feet higher, while Pendle and Pennigant are lower. The meaſurements by Donald are probably near the truth; Croſsfell being, in Dr. Garnett's opinion, the higheſt mountain in England.

Mr. Houſman has, however, given a good general view of the Engliſh mountains. On coming from the ſouth (p. 5.) they begin in Derbyſhire, ſtretching a little into Cheſhire. The tops of the ridges are commonly wet and boggy, and produce heath, bent-graſs, and ruſhes. They are almoſt univerſally calcareous. Near Penrith (p. 8.) they almoſt wholly diſappear. The ſummit of Croſsfell (p. 18.) is ſcarcely 1000 yards above the ſea, and preſents a large heap of looſe whitiſh free-ſtone, or, more probably, argillaceous grit.

been

been any attempt to delineate the chains of mountains in England. The imperfection of the materials muſt therefore apologize for any errors or defects in the ſubſequent ſlight ſketch. The mountains of Cheviot may be ſaid to form a regular ridge, running from the ſouth-weſt, where they join thoſe of Galloway to the north-eaſt. But there is a central ridge which pervades England from north to ſouth, beginning at Geltſdale foreſt, 14 miles S. E. of Carliſle *, and paſſing on the weſt of Durham and Yorkſhire, where it contains mines of coal and lead, but is ſplit into inſignificant appellations of *fells* and *laws*. Kelton-fell, Stanmore, Widehill-fell, Wildboar-fell, Bow-fell, Home-fell, Bunhill, &c. &c. ariſe on the weſtern limits of Yorkſhire. Cumberland and Weſtmoreland preſent many detached mountains, Skiddaw, &c. which can hardly be reduced to any diſtinct arrangement; but thoſe of Craven, in the Weſt Riding of Yorkſhire, as Wharn, or as commonly called by the country people, Wharnſide, Ingleborough, and Pennigant; and Pendle on the eaſt of Lancaſter †; belong to the Central Chain, which proceeds ſouth, through Derbyſhire, ſtill abounding with minerals and natural curioſities; but here it ſeems to terminate, ſpreading a little into Cheſhire. Still, however, a central chain of ſmaller elevation, may be traced, in a zig-zag line, to near Saliſbury, with two diverging and irregular branches on the eaſt, one towards Norfolk, another into Kent, while a third runs ſouth-weſt into Cornwal. To the firſt belong the hills of Gogmagog, in Cambridgeſhire, &c. to the ſecond the hills of Hampſhire, Surrey and Kent. Malvern hills, in Worceſterſhire, deviate from the central ridge, while thoſe of Cotſwold, in Glouceſterſhire may be regarded as a continuation of it. The hills of Mendip, Polden, Sedgemoor, Blackdown, in Somerſetſhire; the Tores and Wilds of Dartmore, in Devon; and the hills and upland downs of

MOUNTAINS

Cheviot.

Central Chain.

* The heathy tract extends to Bewcaſtle and Nichol Foreſt, but is level. Houſm. 427.

† That Ingleborow-hill, Pendle, and Pennigent,
Should named be the higheſt betwixt our Tweed and Trent.

Drayton's Poly Olbion, Song 28.

It is remarkable that Wharn, the higheſt is omitted.

Mountains. Cornwal, extend this chain to the Land's End: and after paſſing this laſt rocky province, it expires in the Iſlands of Scilly *.

Wales is a country abundant in mountains, eſpecially the northern provinces; but their orology remains indeterminate, and it would require the actual ſurvey of an experienced engineer, to reduce them to chains or groupes. To begin with the North, Snowdon commands the firſt attention, a mountain of eminent height and fame. The top is called Y Widdfa, or the conſpicuous, forming almoſt a point, and preſenting a view of the county of Cheſter, the mountains of Yorkſhire, part of Scotland and Ireland, and the Iſles of Man and Angleſey [10].

Snowdon.

Mr. Pennant does not ſpecify the ſtone that compoſes it (probably a granite); but he obſerves that "large coarſe cryſtals are often found "in the fiſſures, and very frequently cubic pyritæ, the uſual attend-"ants on Alpine tracts." From Snowdon, a line of mountains extends by the ſea to Plenlimmon, a boundary of North Wales, whence iſſue the noble rivers Severn and Wye. Of theſe hills, Urrou Seth, Caer Idris, and Moyle Vadiau, are the moſt memorable. The hills on the Eaſt of North Wales, are far from attaining ſuch conſiderable elevation, and gradually decline to the hills of Shropſhire, of which the Wrekin is one of the moſt noted †.

* Among the ſmaller elevations may be named the Chiltern-hills, (whence the vague office of Steward of the Chiltern Hundreds) reaching from Tring in Hertfordſhire, to Henley, in Oxfordſhire. In the latter county are Nettlebed and Shotover-hills.

† Mr. Aikin, in his Tour in Wales, has conſiderably illuſtrated this ſubject. He obſerves (p. 19.) that the Ferwyn mountains occupy the Eaſt ſide of Merioneth, branching into Denbigh and Montgomery; length about ſixteen miles, breadth from five to ten. Cader Idris is the ſecond in height of the Welch mountains (about 3000 feet) and from it extends a primitive chain, running N. N. E. in the Arrans and Arranigs, conſiſting of porphyry and granitell. The ſecond grand ridge, that of Snowdon, alſo runs N. N. E. and conſiſts of ſchiſtoſe hornblende, micaceous ſchiſtus, granite, and porphyry, with ſome large blocks of ſerpentine: this chain extends from Penmaenmawr, towards Traethmawr; and after forming conic peaks at intervals, it ends in the northern horn of Cardigan-bay, that is the ſouthern promontory of Caernarvonſhire.

May not the mountains of Weſtmoreland and Cumberland be conſidered as elongations of theſe two chains, that of Snowdon paſſing from the promontory on the weſt of the bay of Lancaſter, by Helvellyn, and ending in Saddleback and Skiddaw; while the other paſſes from near the river Ken, by Shap Fell, &c.?

[10] Pennant's Journey to London, p. 170.

A chain

A chain proceeds due ſouth to near Cardiff, in South Wales; it is of far inferior height, and a ſmall branch diverges to the weſt, conſiſting of Cwn Cothy, Mynydd, Carreg, Briſley, and Cwm Kerrun-hills. On the eaſt of South Wales, are the hills of Herefordſhire, the Black Mountain, Cuſop-hill, Hargeſt, Stockley-hill, &c. MOUNTAINS.

In the Northern and Weſtern mountains and hills, chalk is unknown, while it forms a chief material of thoſe of the South and Eaſt. An eminent naturaliſt obſerves, that a line drawn from Dorcheſter, in the county of Dorſet, to the county of Norfolk, would form a boundary of the great chalky ſtratum which interſects the kingdom, none being found in any quantity to the north or weſt of that line [11]. The northern mountains are moſtly compoſed of lime-ſtone, free-ſtone, ſlate or ſchiſtus, with mines of lead or coal; thoſe of Derbyſhire preſent vaſt maſſes of lime-ſtone, interſected with thick veins of toad-ſtone, by ſome aſſerted to be the produce of fire, while others aſſign an aqueous origin *, and numerous foſſils and minerals, the conſideration of which is reſerved for a future article. The ſummit of Skiddaw preſents white ſhivery ſlate, or argillaceous ſchiſtus; but ſome of the Weſtmoreland mountains contain ſiliceous ſchiſtus †; and it is probable that granite may exiſt in thoſe of Cheviot. The vaſt baſe of Ingleborough, near 30 miles in circuit, conſiſts of lime-ſtone; on the eaſt ſide full of ſhells to near the ſummit, which is of grit and ſand-ſtone flag; the foſſils, black and brown marble, thin ſlate near Ingleton, rotten-ſtone or tripoli, and ſome lead-ore [12]. And ſuch is this chain to its termination; while further to the ſouth, the eaſterly elevations are of chalk; and thoſe on the weſt, as Mendip hills, in Somerſetſhire, are wholly calcareous. The granite begins at Dartmoor, in Devonſhire, and continues through Cornwall, where it occurs of various colours, the grey granite, or moor-ſtone; the red, or Oriental; the white, the yellow, and the bluiſh, or

[11] Pennant's Journey from Cheſter to London, p. 214. [12] Guide to the Lakes, 265. 267.

* This toad-ſtone is by the miners called *cat-dirt*, but they unluckily apply the ſame name to a very different ſubſtance (a greeniſh lime-ſtone); a circumſtance which has deceived St. Fond, when he aſſerts that lead ore is found in the toad-ſtone, which is never the caſe.

† Called by Houſman (p. 49.) hard grey flint. Fine blue ſlate abounds in Borrowdale. Ib. He ſays, (p. 229.) that near the ſummit of Wharn, there is a thin ſeam of coal, and another is ſaid to correſpond with it on a hill on the oppoſite ſide of Dentdale.

Mountains. pigeon-coloured [13]. Near the Lizard and Mullion, are rocks of ſerpentine and ſteatites, the latter being alſo found in a ſingular variolite, at Thorverton, between Exeter and Upton Pyne. The china-ſtone, or petunſi, uſed in making fine porcelain, is here a decompoſed granite, the felſpar having become ſoft like lithomarga.

The Welch mountains abound in various granites, with large maſſes of quartz and ſerpentine: a French traveller [14], obſerves a ſimilarity between the ſubſtances of the Welch mountains, and thoſe of Wicklow in Ireland, whence he infers a primitive junction. While on the eaſt of England the lime-ſtone ſucceeds the chalk (of which change the noble promontory of Flamborough-head, already deſcribed, affords a ſtriking inſtance) on the coaſt towards Wales, are found granite, and other primitive rocks. The Wrekin, about ten miles eaſt of Shrewſbury, is chiefly compoſed of reddiſh chert, or petroſilex, with ſiliceous ſand-ſtone, baſalt, and a kind of granite [15]. The great coal diſtrict of Colebrookdale, reſts on indurated clay, while that near Briſtol is accompanied by black freeſtone, and even the calcareous freeſtone near Bath, is interſperſed with numerous veins of coal. The Malvern-hills on the S. W. of Worceſterſhire, run N. and S. about ten miles, and afford many granitic rocks with chert and hornblende ſlate [16]. Theſe few notices muſt ſuffice on the compoſition of the Engliſh mountains, a ſubject which only begins to attract the attention which its curioſity deſerves.

Foreſts. To the reader of poetry, the word *foreſt* conveys the idea of a region replete with thick and tall woods, interſperſed with romantic lawns and murmuring rivulets. But in England a foreſt is ſometimes bare of trees, or not unfrequently only preſents a few withered oaks; and the term is even applied to upland downs and heaths. Many of the foreſts were, even in the Anglo-Saxon times, eſteemed royal demeſnes; but the Norman monarchs were ſo much addicted to the chace, that upwards of ſixty foreſts at one time, appertained to the crown; of which the chief now remaining are the foreſts of Dean, in Glouceſterſhire, Sherwood, in Nottinghamſhire; Windſor, in Berkſhire; and the New

[13] Pryce's Mineralogy of Cornwal. Maton's Weſtern Tour, &c.
[14] Coquebert Journ. des Mines. [15] Townſon's Tracts, p. 163. [16] Ibid. 216.

Foreſt, in Hampſhire. The royal foreſts conſtituting ſo large a part of the kingdom, of a diſtinct nature, and regulations different from other regions, many grievances aroſe, till the Barons exacted from Henry III. the foreſt-charter; in which ſeveral deſpotic laws were revoked, and more equity extended to the neighbouring proprietors and tenants. FORESTS.

Beſides the principal foreſts above-mentioned, other diſtricts ſtill retain the name, as Dartmoor-foreſt, in Devonſhire; Enfield-chaſe, in Middleſex; Witham, and Epping-foreſt, and that of Henault, in Eſſex; Sacy and Wittleborough-foreſt, and Rockingham-foreſt, in Northamptonſhire; Peak-foreſt, in Derbyſhire; Malvern-chaſe and Wyre-foreſt, in Worceſterſhire; Cannock-chaſe, and Neidwood-foreſt, in Staffordſhire; Mogg-foreſt, and Clun-foreſt, and that of Hays and Mocktree, in Shropſhire; Macclesfield-foreſt, in Cheſhire; Netherdale-foreſt, and Lancaſter-chaſe, in the Weſt Riding of Yorkſhire; the foreſt of Galtres, and Arkengarth and Stainmore, and Leyne, in the North Riding; Teeſdale and Weredale-foreſts, in the county of Durham; Roſendale-foreſt, in Lancaſhire; Sleddell and Martindale-foreſts, &c. in Weſtmoreland; Geltſdale and Inglewood-foreſts, in Cumberland.

Among the numerous ſpecies of vegetables which are natives of Britain, ſcarcely any are adequate to the ſuſtenance and cloathing of man. Our frequent rains, our blaſting winds, and the ſcanty portion to which we are ſtinted, of the light and heat of the ſun, deprive us entirely of thoſe vegetable treaſures, which, in the tropical climates, offer themſelves in overflowing exuberance, to ſatisfy the wants and luxurious deſires of their human inhabitants. The never-failing verdure of our plains and hills, covered with a rich carpet of graſſes and papilionaceous plants, ſhews how admirably our country is qualified for the ſupport of graminivorous quadrupeds; and we find accordingly that our ancient foreſts abounded in ſtags and roe-deer, as our cleared and cultivated lands do now with ſheep and cattle. This ſeeming partiality of nature, in thus ſcanting to man the ſupply of vegetable food, while it is profuſely offered to the grazing herds of every kind, by obliging the early ſettlers in this iſland to depend for their ſupport, principally on the fleſh of animals, gave them ſtronger motives to perſonal exertion, than General Sketch of Britiſh Botany.

Botany. than an equal ſtate of civilization in a warmer climate, could have afforded. While the native of the tropical regions was receiving from the unpurchaſed bounty of nature, his regular and plentiful ſupply of cocoa-nuts, bananas, and bread-fruit, the Briton was obliged to earn his daily food, by the hard labour of each day, to chaſe the flying deer through the woods, or to diſpute his prey with the boar or the wolf. Thus, by the ſeverity of the climate, and the want of vegetable food, was the firſt germ of exertion ripened into activity, which, by the combined influence of luxury and neceſſity, has at length laid all the vegetable riches of the globe at our feet.

In the general progreſſion of ſcience, botany has advanced with rapid ſteps, and has been cheriſhed with peculiar fondneſs in our native iſland. The Flora of Britain, though it cannot boaſt the moſt ſplendid and exquiſite of vegetable productions, yet contains as great a variety of genera and ſpecies, as any other country of equal extent. The inveſtigation of indigenous, as well as exotic plants, is continually carrying on here with increaſing ardour, and every year brings new acceſſions to our crowded ranks of native vegetables. It cannot be expected, therefore, that we ſhould give a particular account of each ſpecies, and it would be but little agreeable or uſeful, to offer to our readers a barren liſt of Linnæan nomenclature: we ſhall, therefore, chuſe a middle courſe, by giving a general view of the natural families under which the plants of England arrange themſelves, and particularize by name only, ſuch ſpecies, as from their utility or rarity, or other circumſtances, may be worthy of individual notice.

Graſſes. The firſt for importance and variety is the family of GRASSES. Almoſt every part of the country that is not under tillage, is principally covered with graſs. Under almoſt all the differences of ſoil and ſituation, we find the chief covering of the richeſt, as well as of the moſt barren tracts, made up for the moſt part of theſe plants: to theſe we are indebted for the luxuriant verdure of our paſtures, for the cloſe velvet carpeting of our downs and ſheep-walks, and the more ſcanty cloathing of our mountainous diſtricts. Twenty-ſeven genera, and a hundred and ten ſpecies of graſs are natives of our iſland, moſt of them of common occurrence in ſituations where they are found at all. None

of

Botany.

of them have been proved to be poiſonous, either to man or beaſt, on the contrary, whether freſh or dried, they furniſh a grateful food to all our domeſtic cattle. The moſt important graſſes in meadows and paſtures, are the Anthoxanthum odoratum (ſweet ſcented vernal graſs); Phleum pratenſe (cat's-tail graſs); Alopecurus pratenſis and agreſtis (fox-tail graſs); two or three ſpecies of Agroſtis (bent-graſs); Aira flexuoſa and cæſpitoſa (hair-graſs); Holcus lanatus and avenaceus (ſoft-graſs;) Poa trivialis pratenſis, &c. (meadow-graſs); Dactylis glomerata (cock's-foot graſs); Feſtuca avina pratenſis elatior, &c. (feſcue graſs); Avena pratenſis and flaveſcens (oat-graſs). Other ſpecies are natives of marſhes and wet places; theſe are generally the largeſt and moſt luxuriant, and if in quality they be ſomewhat inferior to the preceding, yet the defect is probably more than compenſated by the quantity of herbage that they ſupply. Of theſe the principal are Alopecurus geniculatus; Milium effuſum; Melica uniflora and nutans; Poa aquatica, fluitans, nemoralis; Feſtuca gigantea; Arundo phrogmites, epigeios calamagroſtis. Light ſandy ſoils, eſpecially the flat parts of the eaſtern and ſouthern coaſts, abound in graſſes that are hardly to be met with in the interior of the iſland; the herbage of theſe affords a coarſe and ſcanty paſture, and they are eminently diſtinguiſhed from their kindred ſpecies, by the length and ſtrength of their creeping-roots. The inhabitants of Skey, and the other weſtern iſlands of Scotland, manufacture them into durable ropes: and while growing, they ſerve the very important purpoſe of binding together the looſe ſand, which otherwiſe would be drifted far up the country: the moſt eminently uſeful for this purpoſe are Phalaris arenaria; Aira caneſcens; Arundo arenaria; Elymus arenarius, and Hordeum maritimum. Upon the ſides and ſummits of our mountains, are found a few graſſes that do not appear elſewhere, mixed with ſome others of more general occurrence; as, however, in theſe bleak and elevated ſituations, covered with ſnow for ſome months in the year, and ſhrowded in clouds for the principal part of the remainder, it would be ſcarcely poſſible for theſe plants to bring their ſeeds to maturity, we obſerve in them a wiſe and ſtriking deviation from the common courſe of nature. Like the reſt of their tribe, they throw up flowering ſtems and bear bloſſoms; but theſe are

ſucceeded

Botany. succeeded, not by ſeeds, but by bulbs, which in a ſhort time vegetate, and are already furniſhed with a leaf and roots, before they fall to the ground: all the viviparous graſſes except one (Feſtuca vivipara) if tranſplanted to a lower and warmer ſituation, accommodate themſelves to their new climate, and produce ſeeds. The following individuals compoſe this remarkable claſs, Phleum pratenſe; Aira cæſpitoſa; Poa aquatica alpina annua; Cynoſurus criſtatus; Feſtuca vivipara; Triticum repens. Beſides theſe there are others of a more hardy conſtitution, which appear to be the true natives of the mountains, and multiply their ſpecies by ſeed in the uſual way; of theſe the principal are Phleum alpinum, Poa flexuoſa and cæſia. The rarer graſſes may be divided into thoſe which are found almoſt ſolely in corn-fields, and which probably have been imported from the Continent with ſeed-corn; and into thoſe which are moſt certainly natives; to the firſt claſs belong all the five ſpecies of Panicum; Briza minor; Bromus arvenſis: to the ſecond belong Phleum crinitum; Alopecurus bulboſus; Agroſtis ſpica venti, Seſleria cærulea, Stipa pumata.

Nearly allied to the graſſes in general habit, are the eight genera, Schoenus, Cyperus, Scirpus, Eriophorum, Juncus, Carex, Sparganium, and Typha, comprehending about ninety ſpecies. All theſe are natives of moors, bogs, and pools; they ſerve to give conſiſtency to the deep mud or peat, in which they are rooted, and when young afford a coarſe paſture to ſheep and cattle; ſeveral of them are uſed for matting, thatching, and for chair bottoms. The ſtately Typha (bull-ruſh) is one of the principal ornaments of our fens, and neglected pools, and the ſeveral ſpecies of Eriophorum (cotton-graſs) enliven many a dreary mile of bog, by their gracefully pendent tufts of cotton. The following are the rarer ſpecies belonging to this claſs, Cyperus longus (Engliſh Galangale) found only near St. David's Head, Pembrokeſhire; Scirpus Multicaulis; Eriophorum alpinum; Juncus filiformis, biglumis; Carex cinerea diſtans.

Papilionaceous. The Leguminous, or papilionaceous plants, ſo called from their winged bloſſoms, form a very important claſs in Britiſh botany. They are divided into nineteen genera, and ſixty-four ſpecies. The herbage of all when freſh, and of many when dry, is a moſt grateful food

food to horſes, cattle, and ſheep, and ſeveral of them, as the clovers and vetches, are largely cultivated for this purpoſe. Moſt of this claſs are climbers, and adorn our thickets and hedges with elegant feſtoons of bloſſoms and foliage; a few have been introduced into our gardens and ſhrubberies, as the Fumaria ſolida and lutea (Fumitory); Spartium ſcoparium (broom); and Lathyrus latifolius (everlaſting pea); many more, however, even of ſuperior beauty, have not yet found a place there; of theſe the principal are two ſpecies of fumitory, F. capreolata and claviculata; Lathyrus ſylveſtris (narrow-leaved everlaſting pea), Vicia ſylvatica and Cracca (wood and tufted vetch), plants eminently diſtinguiſhed for their luxuriant growth, their elegant finely divided leaves, and their tufted bloſſoms. Of humbler ſtature, but yet of equal beauty, are Geniſta tinctoria and Anglica (dyers weed and petty furze); Ulex nana (dwarf furze); Anthyllis vulneraria (kidney vetch); and Aſtragalus glycyphyllus (wild liquorice), with yellow flowers; Ononis arvenſis (wreſt harrow); Orobus tuberoſus (heath pea); Hedyſarum onobrychis (ſaint-foin) and Aſtragalus hyppoglottis (mountain milk vetch), with purple flowers; and the Lathyrus Niſſolia, diſtinguiſhed from the reſt by its entire graſs-like leaves, and its ſolitary crimſon bloſſoms. Almoſt all the Engliſh papilionaceous plants flouriſh beſt in light calcareous ſoils, either rocky or ſandy; and ſome of them, as the Anthyllis vulneraria, and Hedyſarum onobrychis, may be reckoned certain indications of chalk or lime-ſtone. There are few rare plants belonging to this claſe; Fumaria ſolida and lutea; Piſum maritimum (ſea-pea); Lathyrus aphaca, hirſutus, and latifolius; Vicia hybrida, and Trifolium glomeratum, are the principal. BOTANY.

The umbelliferous plants form a large and important claſs in the natural arrangement of Britiſh vegetables, conſiſting of thirty-five genera, and about ſixty ſpecies. The roots and ſeeds of thoſe kinds which grow on dry, light ſoils, are frequently aromatic; thoſe that are natives of marſhes and moiſt meadows, are, for the moſt part, in a greater or leſs degree poiſonous. The whole claſs, indeed, is a ſuſpicious one, and contains ſpecies that are fatal, not only to man, but to moſt of our domeſtic quadrupeds. The moſt actively deleterious are the following: Conium maculatum (hemlock); Oenanthe crocata (hemlock Umbelliferous.

Botany. (hemlock drop-wort); Cicuta viroſa, (water-hemlock). A few ſpecies by dint of cultivation, have been rendered ſerviceable to man, either as food, or on account of their aromatic qualities; ſuch are Daucus carota (carrot); Crithinum maritimum (ſamphire); Angelica major; Coriandrum ſativum (Coriander); Paſtinaca ſativa (parſnip); Anethum fœniculum (fennel); Carum carui (carraway); and Apium graveolens (celery), a plant which in its native ſalt-marſhes, is acrid and of diminutive ſize, but by attentive culture becomes ſucculent, nutritive, and of high eſtimation. The vegetables belonging to this claſs are diſtinguiſhed from the reſt by their ſmall cluſtered white or yellow flowers, produced at the extremity of a greater or leſs number of ſpokes, radiating from a common centre, like the ſticks of an umbrella, a mode of inflorescence which diſtinguiſhes them at once from other plants, but diſqualifies them from being ornaments to a garden; ſome of theſe, as Caucalis daucoides, and Anethum fœniculum, are certain proofs of a calcareous ſoil. The rarer ſpecies are Eryngium campeſtre (field Eryngo); Selinum paluſtre (milky parſley); Peucedanum officinale (ſea ſulphur wort); Cicuta viroſa (water-hemlock), in wet places and ſalt-marſhes; Tordylium maximum (great hart-wort); Caucalis latifolia (great bur-parſley); Athamanta Libanotis (mountain-ſtone parſley); Pimpinella dioica (dwarf rock-parſley), on lime-ſtone rocks, and chalk-hills; Meum Athamanticum (ſpignel), in high mountainous paſtures; and Ligueticum Cornubienſe (Corniſh lavage), peculiar to the thickets and hedges of Cornwall.

Labiated. The ringent, galeated, hooded, or labiated plants, hold a conſpicuous place in the Engliſh Flora, and arrange themſelves in the Linnæan ſyſtem, according to the number and ſituation of their ſtamens, partly in the claſs Diandria, and partly in the Didynamia; their bloſſoms are ſituated for the moſt part in whorls or rings, containing five or ſix individuals, and encircling the ſtem from the top downwards. Of theſe, none, except perhaps, the Digitalis (fox-glove), deſerve to be ranked among the poiſonous plants; a conſiderable number, however, exhibit a ſtrong aromatic ſmell, approaching, in ſome caſes, to the fœtid, and poſſeſs other active ſenſible properties. Thoſe which are at preſent uſed in medicine, are Teucrium ſcordium (water Germander);

Mentha

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Mentha viridis (ſpear-mint); Mentha piperita (pepper-mint); Mentha pulegium (penny-royal); Marrubium vulgare (horehound); and Digitalis purpurea (purple fox-glove). Our moſt eſteemed pot-herbs belong to this natural claſs, and are many of them natives of England. Such as (beſides the mints mentioned above) Origanum vulgare (marjoram); Thymus ſerpyllum (common and lemon thyme); and Thymus acinos (baſil thyme), all of them abundant in chalky and calcareous ſoils. There are not many very ſhowy plants in this claſs; but the Galeopſis verſicolor (bee nettle); Antirrhinum cymbalaria, linaria, and majus, (ſnap-dragon); and Digitalis, (fox-glove, both purple and white,) are eminently beautiful. The rarer ſpecies are Utricularia minor (ſmall bladder-ſnout); Salvia pratenſis (meadow-clary); Ajuga Alpina (mountain bugle); Mentha odorata (bergamot mint); Bartſia Alpina (mountain eye-bright); Antirrhinum repens (blue toad-flax); Scrophularia ſcorodonia (balm-leaved fig-wort); and Orobanche cœrulea (purple broom rape). Some of theſe plants have certain peculiarities of ſtructure, which render them worthy of notice. The genus Utricularia (bladder-ſnout), an aquatic, may be diſtinguiſhed from all the reſt, by the numerous ſmall membraneous bags, attached to its finely divided leaves that ſerve to ſupport it on the ſurface of the water; the genera, Lathræa (toothwort); and Orobanche (broom-rape), are paraſitical, that is, they fix themſelves in the roots of other vegetables, from which they derive their nutriment, being incapable of ſubſiſting if planted in the open ground; they are alſo deſtitute of leaves, conſiſting merely of a fleſhy ſtem, terminated by purpliſh brown flowers. The Antirrhinum linaria (yellow toad-flax) is occaſionally ſubject to a ſingular variety, in the ſtructure of its bloſſom, and when in this ſtate, is known by the name of A. peloria. Thirty-ſix genera, and eighty-eight ſpecies, compoſe this claſs.

Liliaceous.

Perhaps the moſt ſplendid of all the herbaceous plants, are thoſe of the bulbous roots, which, from their general reſemblance to the lily, have obtained the name of Liliaceous; moſt of theſe, however, are natives of warmer climates; the ſandy deſarts about the Cape of Good Hope, and the ſhores of the Indian Ocean, produce the moſt beautiful

Botany. ſpecies; of thoſe which are found wild in England, there are only eleven genera, and twenty-eight ſpecies; and the greater number of theſe are of rare occurrence in a truly native ſtate; the ſpring and autumnal crocus, the ſnow-drop, the ſnow-flake, the three kinds of Narciſſus (including the daffodil), the fritillary, tulip, and lily of the valley, as well as three ſpecies of ornithogalum, or ſtar of Bethlehem, are more familiar to us as garden plants, than as natives of our woods and paſtures. The reſt of this claſs are ſeven ſpecies of Allium (garlick); three of Convallaria (Solomon's ſeal), Colchicum autumnale (meadow ſaffron); and four kinds of Scilla (ſquill), one of which the beautiful and fragrant hare-bell, or wild hyacinth, is the principal ornament of our groves and thickets, at a time when they are profuſe of beauties.

Roſaceous. The Roſaceous plants compriſing the claſs Icoſandria of Linnæus, form an important part of Engliſh botany, and include twelve genera, and forty-one ſpecies. Some of theſe are herbaceous, and others are deciduous trees and ſhrubs. In the firſt diviſion, the moſt worthy of notice are, Spiræa ulmaria (meadow-ſweet); growing plentifully by the ſide of brooks and ditches, and ſcenting the air about Midſummer, with its powerful cloying ſweets; Fragaria veſca (wood-ſtrawberry), perhaps the moſt valuable of our native fruits. Tormentilla officinalis (common tormentil), one of the ſtrongeſt vegetable aſtringents. To the ſecond diviſion belong the moſt beautiful and uſeful of our hedge-ſhrubs, the Prunus inſititia, and ſpinoſa (bullace and black-thorn); Meſpilus oxyacantha (hawthorn); Pyrus malus and aucuparia (crab, and mountain aſh); ſeveral ſpecies of Roſa (wild roſe); and Rubus (bramble). The cherry, the medlar, the ſervice, and pear-trees, whoſe fruit, when wild, is of ſo little account, and of ſuch value when improved by cultivation, belong alſo to this claſs. The rarer among theſe plants are Pyrus domeſtica (ſervice-tree); Spiræa ſalicifolia, (willow-leaved ſpiræa); Roſa rubiginoſa (ſweet-briar); Rubus Idæus (raſpberry), in rocky woods; Dryas octopetala (mountain avens); Potentilla rupeſtris (ſtrawberry flowered cinquefoil); Rubus chamœmorus (cloud-berry); Rubus ſaxatilis (ſtone-bramble); on the high mountains of Wales, and

and the north of England. The burnet-roſe, and white beam tree, are certain indications of calcareous ſoil; and, indeed, almoſt the whole claſs thrive beſt on limeſtone. Botany.

The Tetradynamious, or cruciform plants, compoſe a large natural claſs, entirely diſtinct from any other, the individual ſpecies, however, of which, have ſo many common features of reſemblance, as to render it, in ſeveral caſes, by no means eaſy to aſcertain their ſpecific differences. The flower conſiſts of four petals, diſpoſed in the form of a croſs, containing one piſtil and ſix ſtamens, two of which are ſhorter than the reſt; theſe are ſucceeded by a pouch or pod, bearing the ſeeds, hence the claſs is divided into the pouched and podded plants. The taſte of all theſe is more or leſs acrid, but none are poiſonous: they are found to be peculiarly grateful to ſailors who have been long at ſea, and thereby have contracted the ſcurvy; on this account theſe vegetables have obtained the name of antiſcorbutics; their hot biting flavour is the moſt intenſe in wet ſeaſons, and in a ſwampy ſoil, and is remarkably mitigated by cultivation in light ſandy ground. Many of our moſt eſteemed culinary vegetables are of this claſs, ſuch as the cabbage, with all its varieties of brocoli, cauliflower, &c. the turnip, the radiſh, muſtard, creſs, and horſe-radiſh; twenty-three genera, and ſixty-two ſpecies, compoſe this claſs. The moſt worthy of notice are the ſeveral kinds of Lepidium, or pepperwort; of Cochlearia, including the ſcurvy-graſs and horſe-radiſh; of Braſſica, containing the colewort, field-cabbage, coleſeed, turnip, and ſea-cabbage; of Sinapis, including the white and common muſtard; Bunias catuile (ſea-rocket); Crambe maritima (ſea-kale); Siſymbrium naſturtium (water-creſs); and Eryſimum alliaria (ſauce alone); all theſe are wholeſome and agreeable vegetables, either in ſallads or boiled. Iſatis tinctoria (woad), is worthy of mention, as a dyeing drug, anciently uſed by the Britons for the purpoſe of ſtaining their ſkins, and in ſome eſtimation even at preſent, as a ſubſtitute for indigo. The few rare plants belonging to this claſs are, Vella annua (annual creſs rocket); Siſymbrium monenſe (ſea-rocket), in ſandy-ſoils; Draba incana (wreathed creſs); Iberis amara (bitter candy-tuft), on limeſtone; Thlaſpi arvenſe (ſmooth Mithridate muſtard,) Cruciform.

Botany. muſtard), in clay; Cochlearia Danica (Daniſh ſcurvy-graſs), in mud by the ſea-ſide. The only native cruciform plant adopted into our gardens, is Cheiranthus cheiri (wall-flower); if, indeed, it be not rather to be conſidered as of foreign origin.

Radiated. One of the largeſt of the natural claſſes of Engliſh vegetables, is that of the radiated or compound flowered plants; theſe bear flowering heads, conſiſting of numerous florets, incloſed in a common calyx, and ſeated on the ſame receptacle; each fertile floret is compoſed of a tubular, or ſtrap-ſhaped petal, and five ſtamens, the anthers of which are united into a hollow cylinder, through which riſes the piſtil; this is followed by an oblong ſeed, terminated by a ſmall column, crowned by a radiated feather; by this ingenious apparatus, when the ſeed is ripe it detaches itſelf from the receptacle, and is carried in the air to a conſiderable diſtance, and is on this account called a winged ſeed. Forty genera, and 120 ſpecies, belong to this claſs. It is rather remarkable, that out of ſo large a number of plants, many of which are very abundant, and of great ſize, only a ſingle one, the Tragopogon porrifolius (ſalſafy), ſhould be applied to the ſuſtenance of man, and not even a ſingle one ſhould be cultivated for the uſe of cattle; more eſpecially as the Lactuca viroſa (ſtrong-ſcented lettuce), is the only ſpecies poſſeſſed of deleterious properties. Moſt of this claſs have an ungrateful bitter taſte, and the ſucculent ones contain a white milky juice, of an acrid flavour. Of all our native vegetables, they are the commoneſt, thriving by neglect, and multiplying under perſecution; the farmer and gardener are unceaſingly employed in their deſtruction, for they contribute little or nothing to the ſupport of man, and the larger quadrupeds; nor is the beauty of their appearance ſuch, as to obtain for them a place in the flower-garden. The annual kinds, however, producing vaſt multitudes of ſeeds, and the perennial ones being furniſhed with long and deeply ſtriking roots, there is no fear of their extermination; they occupy road ſides, ditch banks, and all waſte places that are incapable of cultivation, and ſeem peculiarly devoted to the ſuſtenance of the granivorous birds, by their ſeeds, and of numerous tribes of inſects, by their foliage. The ſow-thiſtle, hawkweed, burdock, thiſtle,

cud-weed, coltsfoot, groundſel, dandelion, daiſy, and yarrow, are the moſt commonly occurring genera; a few, as the chamomile, wormwood, elecampane, and feverfew, are employed in medicine. The daiſy, and butter-bur (Tuſſilago petaſites), are generally the firſt bloſſoms of the ſpring, and on that account are beheld with greater ſatisfaction than more ſhowy plants. The rarer individuals attached to this claſs are, Hieracium alpinum (alpine hawkweed), and Serratula alpina (alpine ſaw-wort), found in Wales; Crepis fœtida (ſtinking hawkſbeard), in calcareous ſoil; Santolina maritima (ſea-cotton weed); Artemiſia cœruleſcens (blue ſouthern-wood), on the ſea-ſhore; Artemiſia campeſtris (wild ſouthern-wood); Gnaphalium Gallicum (graſs cud-weed), on light ſandy ground; Senecio paludoſus (marſh golden-rod); Inula Helenium (elecampane), in marſhes, ditches, and wet meadows. Botany.

The greateſt part of the claſs Gynandria in the Linnæan ſyſtem of Engliſh plants, is occupied by the Orchis tribe, conſiſting of five genera, orchis, ſatyrium, ophrys, ſerapios, and cypripedium. Theſe differ remarkably in ſtructure from the reſt of our native vegetables; they are bulbous or tuberous-rooted, have entire ſword-ſhaped leaves; each root throws up a ſingle ſtem, terminated by a looſe, or crowded ſpike of bloſſoms; the bloſſoms themſelves conſiſt of five petals, generally diſpoſed ſo as to reſemble a fly, bee, ſpider, or other inſect, of two ſtamens ſeated upon the piſtil of a nectary or honey-cup, lengthened into a horn, or diſtended like a bladder; the ſeeds reſemble brown coarſe duſt, and though repeatedly ſown, have never yet been known to germinate. They are all either ſingular or beautiful plants, and would no doubt be more frequently introduced into our gardens, if they were of eaſier cultivation. They are of but little account as food for cattle, but the roots of the bulbous kinds abound in a mild farina, which might be uſed for human nutriment; the jalep of the ſhops is the powdered root of a ſpecies of orchis that is found in Turkey. The number of Engliſh ſpecies belonging to the above-mentioned genera, is about thirty-two; of theſe the Ophrys anthropophora (man orchis); Ophrys myodes (fly orchis); Ophrys apifera (bee orchis); Ophrys aranifera (ſpider orchis), are the moſt ſingular for the form of their bloſſom, the general appearance of which is expreſſed by their trivial names. Orchis.

Botany. names. The moſt eminently beautiful kinds are, Orchis pyramidalis (late flowering orchis); Orchis maſcula (early orchis); Orchis conapſea (red-handed orchis); Satyrium hircinum (lizard flower); Serapias grandiflora (white helleborine); Cypripedium calceolus (ladies ſlipper). A few are remarkably fragrant, eſpecially in the cool of evening; theſe are Orchis bifolia (butterfly orchis); Orchis conapſea; Ophrys monorchis (muſk orchis). Several grow in wet boggy places, but by far the greater part are inhabitants of calcareous diſtricts; the county of Kent in particular, is remarkably rich in them.

Trees. Such of our trees and ſhrubs as have not been already mentioned, may be conſidered as forming a peculiar claſs, and one of great importance; it is naturally ſubdivided into the evergreen and deciduous.

Evergreens. The moſt valuable of our native evergreens, are the box, the pine, the yew, and the holly; thoſe of ſecondary conſequence, are the juniper, and ivy; the ſpurge laurel (Daphne lauriola); the cranberry, and thoſe extremely ornamental plants, the Vaccinium vitis idæa (red whortle berries); and Arbutus uva urſi (bear-berry).

Deciduous. The deciduous timber-trees that are either aboriginal, or at leaſt have been long naturalized to our ſoil, are the oak, the cheſnut, and beech, all of which are *maſt-bearing trees*, or produce farinaceous oily nuts, the favourite food of hogs, and of many graminivorous quadrupeds; the birch, the alder, the hornbeam, the abele, the black poplar, and the aſpen, bearing catkins; the ſycamore, the maple, and the aſh; the lime, the elm, and wych hazle. A middle ſtation between the timber-trees and ſhrubs, is occupied by the hazle, and the numerous ſpecies of willow. The pulpy fruit-bearing ſhrubs are, the currant and gooſeberry, (Ribes,) the elder, the barberry, the bilberry, the cornel, or dogwood, the buckthorn, and berry-bearing alder, (Rhamnus,) the guelder roſe, and mealy-tree, (Viburnum,) and the Mezereon; the four firſt are wholeſome and grateful to the palate, the reſt are either inſipid or noxious. The four kinds of Erica (heath); and Andromeda polifolia (Poley mountain), are low, ſhrubby plants, that form the moſt ſplendid ornaments of our bogs and moors.

Ferns. The Filices or ferns, comprize a number of elegant plants that grow in moiſt, ſhady, and uncultivated places, the uſes of which have been but

but little enquired into; eleven genera, and about forty-four ſpecies, are natives of Britain; the roots of moſt abound in a mild ſweetiſh mucilage, which in times of ſcarcity has been reſorted to for nutriment; the larger and commoneſt kinds, ſuch as Pteris acquilina (common fern or brakes), are collected and burnt for the potaſh, which is yielded from their aſhes; the Equiſetum hyemale (ſhave-graſs), is much uſed by turners and cabinet-makers, as a fine file to ſmooth their work with. Botany.

The ſmalleſt of vegetables, the moſſes, are at the ſame time the moſt numerous; ten genera, and nearly 200 ſpecies, compoſe this natural claſs. To man and the larger animals, they appear to be of little or no uſe; low and ſhady places are in general over-run with them, and on walls, and hard dry banks, where other plants are unable to vegetate, theſe readily gain a ſettlement; by the decay of ſucceſſive generations, a ſufficient depth of ſoil is at length formed for the nutriment of other vegetables, and this is, perhaps, the principal advantage derived, at leaſt by man, from the exiſtence of theſe plants. Moſſes.

Thoſe cruſtaceous, and leather-like plants, which cover the ſides of walls and rocks, and abound on dry heaths, form the claſs of lichens, nearly as numerous as the preceding one; their general uſe in the œconomy of nature, ſeems to be nearly the ſame as that of the moſſes; the ingenuity of man has, however, applied them to ſeveral other purpoſes. The Lichen pulmonarius, has gained the name of lungwort, from its ſuppoſed uſe in medicine; Lichen Icelandicus, when boiled in water or milk, produces a kind of gruel of little account in this country, but in Iceland forming an important part of the food of the inhabitants; the Lichen prunaſtri, ſerves as the baſe of ſeveral ſcented powders; that beautiful but fugitive crimſon dye, the archil, is prepared in England from the Lichen parellus, and L. calcareus (Dyer's lichen). Several others are employed by the peaſants of Wales, Derbyſhire, and the North of England, in dyeing their home-made woollen cloths. Lichens.

The claſs of Fungi includes ſeventeen genera, and ſeveral hundred ſpecies of native vegetables, almoſt all of which are abandoned to neglect; in France and Italy, ſeveral kinds are collected for the table, and Fungi.

Botany. are reckoned ſome of its principal delicacies; in this country they lie for the moſt part under the obloquy of being poiſonous, ſo that only the five following are uſed, viz. Merulius cantharellus (Chanterelle muſhroom); Agaricus oreades (Fairy-ring M.); Agaricus campeſtris (common M.); Phallus eſculentus (Morell); and Tuber cibarium (truffle.)

Sea-weeds. The laſt claſs of Engliſh vegetables, is that of the marine Algæ, or ſea-weeds. Four genera, and between two and three hundred ſpecies, are found upon our own ſhores; the more tender and gelatinous kinds, are eaten either raw or boiled, and the reſt on thoſe rocky parts of the coaſt, where they can be collected in great quantities, are burnt into kelp for the uſe of the ſoap-boilers and glaſs-makers.

Zoology. Mr. Pennant, in his Britiſh Zoology, has treated this ſubject at due extent, and with his uſual ability. The nature of this work will only admit of a few imperfect notices. Of animals, that celebrated author enumerates twenty genera, from the horſe down to the ſeal and bat. The birds extend to forty-eight, the reptiles to four, and the fiſh to forty genera, beſides the cruſtaceous and ſhell fiſh.

That noble and uſeful animal, the Horſe, is found in England of many mingled breeds, while moſt other kingdoms produce only one kind [13]. Our race-horſes deſcend from Arabian ſtallions, and the genealogy faintly extends to our hunters. The great ſtrength and ſize of the Engliſh draught-horſes, are derived from thoſe of Germany, Flanders, and Holſtein; and other breeds have been ſo intermingled, that native horſes may be found adapted to every purpoſe of pomp, pleaſure, or utility. Thoſe of Yorkſhire are particularly celebrated for their ſpirit and beauty; and the grooms of that county are equally noted for their ſkill in the management of this valuable animal. It is ſomewhat remarkable, that while England excels all the European countries in various breeds of horſes, yet veterinary ſchools are of recent inſtitution. The ſpeed of Childers was computed at a mile in a minute; and ſuch is the ſtrength of a Yorkſhire pack-horſe, that he will uſually carry 420 pounds; nay, a mill-horſe will ſupport for a ſhort diſtance, a

[13] Pennant's Zoology, vol. i. p. 1.

weight

weight of 910 pounds. Mr. Pennant obſerves, that though the Britiſh cavalry was remarkable, even in the time of Julius Cæſar, yet we know not what was the primitive breed. Zoology.

The indigenous breed of horned cattle, is now only known to exiſt in Neidwood-foreſt, in Staffordſhire, and at Chillingham-caſtle, in Northumberland. They are long-legged and wild like deer, of a pure white colour, with black muzzles, ears, and tails, and a ſtripe of the ſame hue along the back. The breeds of our cattle are almoſt as various as thoſe of our horſes; thoſe of Wales and Cornwall are ſmall, while the Lincolnſhire kind derive their great ſize from thoſe of Holſtein. In the North of England we find kylies, ſo called from the diſtrict of Kyle, in Scotland; in the South we find the elegant breed of Guernſey, generally of a light brown colour, and ſmall ſize, but remarkable for the richneſs of their milk. Of late years Mr. Bakewell, and others, have brought the breeding of cattle and ſheep to a regular ſyſtem.

The number and value of ſheep in England, may be judged from the ancient ſtaple commodity of wool. Of this moſt uſeful animal ſeveral breeds appear, generally denominated from their particular counties or diſtricts; thoſe of Herefordſhire, Devonſhire, and Cotſwold downs, are noted for fine fleeces, while the Lincolnſhire and Warwickſhire kind, are remarkable for the quantity. The Teeſdale breed of the county of Durham, though lately neglected, continue to deſerve their fame. The wool is beautiful, but the length of their legs, leſſens their value in the eyes of the butcher. The mutton of Wales, on the contrary, is eſteemed, while the wool is coarſe, yet employed in many uſeful and ſalutary manufactures. The Norfolk breed is remarkable for black faces and legs. Thoſe of Leiceſterſhire are very large, and without horns.

The moſt laudable exertions have lately been made by the Board of Agriculture, and by individuals, for the improvement of the Engliſh fleece.

The goat, an inhabitant of the rocks, has, even in Wales, begun to yield to the more uſeful ſheep; that country being, like Scotland, more adapted to the woollen manufacture. It is to be regretted that ſome

Zoology. means are not diſcovered of preventing the goat, an uſeful animal to the poor, from being ſo deſtructive to plantations and agriculture. The breeds of ſwine are various and uſeful.

England alſo abounds in breeds of dogs, ſome of which were celebrated even in Roman times. In the reign of Elizabeth, Dr. Caius or Kay enumerates ſixteen denominations of Engliſh dogs. Some ſeem to be now extinct; and the blood-hound only occurs in Staffordſhire. The terrier, as the name implies, was uſed to force the burrowing animals from their holes; the harrier, a-kin to the fox-hound, for hunting the hare. The grey-hound was ſo called, as Caius informs us, becauſe he was the firſt in *degree* among dogs. The tumbler of that author ſeems to be our lurcher. The ſpaniels from Spain, as the name imports, were trained as ſtarters, ſetters, and pointers, but the latter deſcription is modern; the water-ſpaniel was uſed to recover the ſlaughtered game; the ſpaniel gentle, or comforter of Dr. Caius, is our lap-dog; the ſhepherd's dog is Buffon's fanciful father of the whole canine progeny, and always diſplayed its docile qualities. The maſtiff, or *amaze-thief*, was employed in defending the houſe: to this ſpecies Mr. Pennant aſcribes the bull-dog, an animal of ſurpriſing ſpirit and fierceneſs. The curs and mongrels are numerous; but the turnſpit is now exploded. Of late the Newfoundland-dog, of more uſeful and generous qualities, has, in ſome degree ſupplanted the maſtiff; and the ſpotted Dalmatian forms an additional attendant on an equipage.

The cat is one of the moſt univerſal, and moſt identic of animals, thoſe of Angola excepted, with their white fleeces, and thoſe of Ruſſia with a bluiſh fleece, and eyes of topaz.

Of our ſavage animals the moſt fierce and deſtructive is the wild cat, which is three or four times as large as the domeſtic, with a flat broad face, colour yellowiſh white, mixed with deep grey, in ſtreaks running from a black liſt on the back; hips always black, tail alternate bars of black and white; only found in the moſt mountainous and woody parts. The wolf has been long extinct, but the fox abounds. It is ſufficient to name the badger, the fitchet, the martin, the ſtoat, or ermin, the otter, ſquirrel, dormouſe, rat (the native or iron grey, has lately almoſt vaniſhed before the brown kind of India, falſely called the Norway

Norway rat), and various kinds of mice. The mole, urchin, and bat, ſeem to become more rare; the ſeal is chiefly found on the coaſt of Wales. Zoology.

In the parks of the great, the roe is now extinct, but fallow deer abound, of great beauty, and the red deer; the latter are known by the terms, ſtag, hind, young, or calf; while the former are ſtyled buck, doe, and fawn; the red kind are more vicious than the other, and becoming more uncommon.

The chief of our birds of prey, are the golden eagle, ſometimes found on Snowdon; the black eagle has appeared in Derbyſhire; the oſprey, or ſea eagle, ſeems extinct in England. The peregrine falcon breeds in Wales; and many kinds of hawks in England. An enumeration of the other birds would be ſuperfluous. The nightingale, one of the moſt celebrated, is not found in North Wales, nor any where to the North, except about Doncaſter, where it abounds; nor does it travel ſo far weſt as Devonſhire and Cornwall [14]. This limitation is remarkable, as theſe birds are found in the ſevere climate of Sweden. Our poultry ſeem to originate from Aſia; our peacocks are from India; our pheaſants from Colchis; the guinea-fowl (the Meleagrides, or Numidian hens of the ancients) are from Africa. Our ſmalleſt bird is the golden-creſted wren, which ſports on the higheſt pine-trees; and our largeſt the buſtard, ſome of which weigh twenty-five pounds, and are found in the open countries of the ſouth and eaſt. But this bird ſeldom appears; and our turkeys, originally from America, richly ſupply the defect; the largeſt are reared in Norfolk and Suffolk. One of the moſt ſingular of our water-fowl is the long-legged plover: the moſt uſeful the mallard or wild-duck, which is chiefly caught in the fens of Lincolnſhire; the numbers ſent to the capital, almoſt exceed credibility.

The reptiles are the coriaceous tortoiſe, frogs, toads, ſeveral kinds of lizards: of our ſerpents the viper alone is venomous; other kinds are the ringed ſnake, ſometimes found four feet in length; and the blind worm, ſeldom exceeding eleven inches.

[14] Pennant's B. Z. I. 360.

Of

Zoology. Of fiſh, the whale ſeldom appears near the Engliſh coaſts, nor the dolphin; the porpeſs, and others of the ſame genus are not uncommon. The baſking ſhark appears off the ſhores of Wales. Numerous are our edible ſea-fiſh. Some of the moſt celebrated are the turbot, doree, ſoal, cod, plaice, ſmelt *, mullet, &c. &c. The conſumption of herrings and mackarel extends to moſt parts of the kingdom; but pilchards are confined to the Corniſh coaſts. Our chief river fiſh are the ſalmon and the trout, which are brought from the northern parts in prodigious numbers, generally packed in ice; but ſometimes the trout are brought alive, in veſſels provided with a well or baſon for that purpoſe. It is ſaid that not leſs than 30,000 ſalmon are brought from one river, the Tweed, to London, in the courſe of a ſeaſon. The lamprey, though a ſea-fiſh, is chiefly found in the Severn; it reſembles the eel, but has a line of ſeven apertures near the head. The charr is chiefly found in the lakes of Weſtmoreland, the ſides ſprinkled with red ſpots. The umber, or greyling, ſomewhat reſembles the trout. The ſamlet is the ſmalleſt of the trout kind, and has erronouſly been ſuppoſed the young of the ſalmon; in Scotland it is called the par. Our carps are from Poland, and the inferior ſort from Pruſſia: the tench and perch are eſteemed by ſome as dainties of the table.

The lobſter is found on moſt of the rocky coaſts, particularly off Scarborough. This cruſtaceous fiſh has ſingular habits; with its blunt claw it maintains its ſituation, while that with ſerrated pincers divides its food: the claws are reproduced, though not ſo large as the firſt; they change their ſhells every year. The craw-fiſh is a ſmall kind of lobſter, which dwells in the clayey banks of rivers. Of ſhell fiſh, the pearl mya, a large kind of muſſel, was found in the Conway, in Wales, and the Irt, in Cumberland; but it ſeems now confined to Ireland and Scotland. Pearls ariſe from the perforation of a kind of worm, and may be produced artificially, by boring the ſhell, and replacing the mya in the water [15]. The Engliſh oyſters maintain their Roman reputation; but they ſeem to yield in flavour to thoſe of more northern

* Mr. Pennant, iii. 371. ſuppoſes white bait to be the young of the bleak.

[15] Pennant, B. Z. iv. 80. St. Fond. II, 190.

countries. The green from Colcheſter, in Eſſex, and the juicy white from Milton, in Kent, have the chief reputation. Zoology.

It ſeldom or never happens that countries, abundant in the productions of agriculture ſhould, at the ſame time, preſent an opulent mineralogy. Yet England is far from being deficient in this reſpect. Mineralogy.

The tin mines in Cornwall have been already mentioned; and they are not only venerable from their antiquity, but are, it is ſuppoſed, the richeſt of the kind in the world. Tin is alſo found in Bohemia, Saxony, and Hungary, and in the Oriental regions of Malacca, Banca, and Siam, but not in ſuch laſting exuberance as in the Corniſh mines. That kind of ſilver, termed by mineralogiſts horn-ore, is alſo found in that diſtrict; but the profound ſecrecy obſerved in working it, forbids any inveſtigation of the amount. The Huel rock boaſts of what is called bell-metal ore; and of wolfram *.

Cornwall alſo produces copper at Redruth, Alſtone, and the Land's End. The ſame metal is found in Yorkſhire, and Staffordſhire; but no where in ſuch abundance as in the Parrys mountain, in the north-weſt of Angleſea [16]. Inſtead of deſcending in veins through various rocky ſtrata, the uſual form of metallic ores, it here forms a prodigious heap, and is worked in the manner of a quarry. The mountain is almoſt bare of ſhrubs or graſs; and is covered with aluminous ſlate, under which, in grey chert, is the ore, being chiefly the yellow ſulphurate, which yields a quarter of copper, and a quarter of ſulphur, the remaining half being refuſe. This valuable mine was diſcovered about thirty years ago.

Lead is found in the Mendip-hills, Somerſetſhire; which alſo produce calamine and manganeſe. The lead-mines in Derbyſhire are well known, not only for that metal, but for the beautiful veins of fluor, which accompany it, and which is manufactured into ſeveral ornamental

* Mr. Maton informs us, that *Huel* (pronounced Whele) means a *mine*; that the tin pebbles form ſtrata, in blueiſh marl, mixed with ſand and marine ſpoils; and the richeſt mine is at Polgooth, two miles S. W. of St. Auſtle. (Weſtern Tour.) *Opal* is found in yellow copper ore at Roſkeir, Ibid.

[16] Aikin's Wales, 133.

articles.

Minerals. articles. In general the northern central ridge of mountains, abounds with lead-ore. The lead-mines of Aldſton, on the eaſtern verge of Cumberland, employ about 1100 men.

No metal is ſo widely diffuſed through the globe as iron; and England not only contains excellent mines, but excels all nations in the variety of fabrication. The moſt remarkable mines of iron, are thoſe of Colebrook-dale, Shropſhire, Dean-foreſt in Glouceſterſhire, with ſome in the north of England, particularly near Ulverſton, in Lancaſhire.

Among the minor metals, zinc, in the form of lapis calaminaris, and blend, is found in Derbyſhire, Cornwall, and other regions. Nickel and arſenic ſometimes appear in Cornwall; and recently, what is called menachanite. But one of the moſt important of this kind is plumbago, or black lead, which is found in the ridge of Borrodale, near Keſwick, in Cumberland: the mine is only opened at certain intervals of time.

Gold has been diſcovered in various quarters of England, particularly near Silſoe, Bedfordſhire; but the metal has never recompenſed the labour and expence [17]. The real gold mines of England are thoſe of coal, found in the central, northern, and weſtern parts, but particularly in the northern, around Newcaſtle. This ſubſtance is a mixture of carbon with bitumen, which laſt abounds in the Newcaſtle coal, and is the cauſe of its coaleſcing when inflamed [18]. An ingenious traveller has aſcribed the whole opulence of England to her coal, as being the very ſoul of her manufactures, and conſequent commerce [19]. The coals of Whitehaven and Wigan are more pure; and the cannel and peacock coals of Lancaſhire, are ſo beautiful, that they are ſuſpected by ſome to have conſtituted the *gagates*, or jet, which the ancients aſcribed to Britain *. A ſingular ſpecies of coal is found in Boveyheath, Devonſhire, reſembling wood impregnated with bituminous

[17] Gough's Camden, i. 330.

[18] Kirwan's Min. II. App. The Briſtol coal, ſo abundant at Kingſwood, burns more rapidly than that of Newcaſtle.

[19] St. Fond.

* True jet is ſaid to be found in Lincolnſhire; it abounds in the ſouth of France, and north of Spain, being palpably ancient timber.

matter.

matter. Turf or peat is common, even in Hampſhire, and other ſouthern counties. MINERALS.

The mines of rock ſalt, in Cheſhire, muſt not be omitted. They appear to have been known to the Romans, as a place called *Salinæ* is here mentioned by the geographer of Ravenna. Leland has deſcribed them in the time of Henry VIII; nor were they unknown even in the Saxon periods. Thoſe of Northwich are the moſt remarkable: at Namptwich and Middlewich, are only ſalt-ſprings; and others occur at Droitwich, in Worceſterſhire, and Weſton, in Staffordſhire. The immenſe mines on the ſouth ſide of Northwich, were diſcovered about the beginning of this century. The quarries, with their pillars and cryſtal roof, extending over many acres, preſent a beautiful ſpectacle; the ſtratum of ſalt, lies under a bed of whitiſh clay, at the depth of about forty yards. The firſt ſtratum is about twenty yards thick, ſo ſolid as to be blaſted with gunpowder, this ſalt reſembles brown ſugar-candy. Next is a bed of hard ſtone, under which is a ſecond ſtratum of ſalt, about ſix yards thick, ſome parts brown, others as clear as cryſtal. The Witton pit is circular, 108 yards in diameter, the roof ſupported by twenty-five pillars, each containing 294 ſolid yards of rock ſalt; the whole covering near two acres of land. The annual produce of rock ſalt at Northwich, has been eſtimated at 65,000 tons; of which about two thirds uſed to be exported to Flanders and the Baltic [22]. Salt Mines.

Marbles, and free-ſtone, or calcareous ſand-ſtone, of various colours and textures, alſo occur; the moſt celebrated of the latter are thoſe of Portland, Purbeck, &c. Fine alabaſter appears in Derbyſhire; fullers-earth in Berkſhire, and ſome other counties.

Nor is England leſs productive of mineral waters, of various properties and deſcriptions. Thoſe of Bath have been celebrated ſince the Roman times. Next to that place of faſhionable reſort, may be mentioned the hot-wells of Briſtol, thoſe of Tunbridge in Kent, and of Buxton and Scarborough in the North. Thoſe of Cheltenham in Glouceſterſhire, have been eſteemed beneficial in ſcorbutic caſes; but Mineral Waters.

[22] Pennant's Journey from Cheſter to London, p. 26. (He eſtimates the duty at 20,000*l.*) Gough's Camden, ii. 436. Aikin's Manchester, 427.

Minerals. to enumerate the ſprings of inferior note, would be infinite, as chalybeat wells at leaſt, muſt occur in almoſt every county, and new waters are daily ſtarting into celebrity.

Natural Curioſities. Among the natural curioſities, thoſe of Derbyſhire have always been eſteemed the moſt memorable. Hobbes and others have long ſince celebrated the wonders of the Peak, a mountain not equal in height to thoſe of Wales, or the more northern part of England, but perforated with ſuch vertical chaſms, and ſuch ſurpriſing caverns as have deſervedly excited admiration. Theſe caves are often interſected by ſubterraneous waters; and mineralogiſts ſeem to aſcribe their formation to this cauſe, the rock being of calcareous ſtone. Theſe ſubjects have now become too trite and familiar to allow further deſcription; and it ſhall only be obſerved, that the cavern at Caſtleton, now decently called Peak's hole, is of a vaſt extent, and preſents ſingular aſpects, while Poole's hole, near Buxton, is celebrated for its lofty roof, and curious ſtalactites. Near Eyam is Bamforth-hole, a ſtalactitic cavern of conſiderable extent [23].

Other remarkable caverns are found in the northern ridge of Engliſh mountains. In the vale of Kingſdale, on the weſtern extremity of Yorkſhire, is Yordas cave, which preſents a ſubterraneous caſcade; this cave is about fifty yards in length. But the moſt noted is Wethercot cave, not far from Ingleton. It is ſurrounded with trees and ſhrubs, in form like a lozenge, divided by an arch of lime-ſtone, paſſing under which you behold a large caſcade, falling from a height of more than twenty yards; the length of this cave is about ſixty yards, the breadth thirty. The vaſt limeſtone baſe of Ingleborough, is perforated in all directions like a honeycomb. It is the River Weaſe, or Greta, which pervades the cave at Wethercot, and another at Gatekirk, and runs not leſs than two miles under ground. This ſtream muſt not be confounded with the Greta, which falls into the Tees near Barnard-caſtle, and riſes near Brough, in Stanmore; two rivers, the Ouſe and the Swale, running betwixt them. Among other curioſities in this neighbourhood, muſt not be omitted Hurtlepot, a round deep cavity, near forty yards in

[23] Aikin's Mancheſter, p. 76. St. Fond, tom. ii.

diameter,

NATURAL CURIOSITIES.

diameter, almoſt ſurrounded with rocks, about thirty feet perpendicular, above its black waters, while the overbranching trees increaſe the horrors of the ſcene [24]. Not far to the ſouth-eaſt, is a lake called Malham Tarn, of clear and very cold water, abounding in trout. This is the ſource of the river Aire, which runs about a mile under ground; and near it is Malham cove, a kind of amphitheatre, of ſmooth perpendicular limeſtone, about 280 feet high in the centre. The river Ribble, near its origin in theſe parts, alſo ſinks into a deep cavern; and ſilently pervades the mountains for about three miles. Near Settle, at the bottom of ſome calcareous rocks, is one of the moſt remarkable ebbing and flowing wells in the kingdom [25]. This diſtrict alſo abounds with rare and curious plants: and in the grand features of nature, exceeds any other region in England or Wales *.

The lakes of Cumberland form another grand ſcene of attraction, but it would be idle to attempt to depict, in a few words, beauties which have been deſcribed by ſo many authors, and particularly by the glowing pencil of a Gray. Suffice it to obſerve, that the three moſt celebrated lakes are thoſe of Coniſton, Windermere, and and Derwent. The beauties of the firſt have been compared to the delicate touches of Claude; the noble ſcenes of the ſecond, to thoſe of Pouſſin; while Derwent has much of the ſublime mildneſs of Salvator Roſa: but moſt travellers eſteem Ulſwater, the moſt truly ſublime.

The mountainous regions of Wales may well be ſuppoſed to preſent many natural curioſities; and the Parrys mine in Angleſea, is in itſelf a ſurpriſing object. The cataracts in Cumberland are rivalled by a remarkable fall of the Tees, on the weſt of the county of Durham, over which is a bridge ſuſpended by chains, ſeldom paſſed but by the ad-

[24] Weſt's Guide to the Lakes; and a curious pamphlet on the caves of Yorkſhire, 1781, 8vo. By Houſman's Map, this Greta paſſes by Ingleton to the Lon and Lancaſter.

[25] Aikin's Mancheſter, p. 91.

* Mr. Houſman alſo gives a good account of theſe curioſities, he obſerves, p. 26, that rocks are in Cumberland called *Linns* (whence the name is in Scotland applied to a cataract); and Sour Milk Force, near the bottom of Buttermere lake, is ſuppoſed to fall upwards of 300 yards. A curious cave was lately diſcovered, p. 53, by miners near Croſsfell, ſaid to be two miles in length, and full of ſplendid ſpars. Gordale Scarr, p. 199, near Malham cove, is a dreadful rent through high rocks, worthy of the attention of a curious traveller.

Natural Curiosities.

venturous miners; nor muſt Aſgarth force, in Yorkſhire, be paſſed in ſilence.

Near Darlington, in the county of Durham, are three pools of great depth, about thirty yards, called Hell Kettles, concerning which many fables have been current, as is uſual with all nations, concerning any natural phœnomena. The cliffs near Sunderland conſiſt of a ſingular ſtone, reſembling coraline productions; and ſo firm as to be generally uſed there in building *.

The ſub-marine relics of a foreſt, on the coaſt of Lincolnſhire, may be deſervedly claſſed among the moſt remarkable natural curioſities. Nor are the lofty chalk cliffs of Dover without their claim. The cavern near Ryegate, in Surrey, deſcending through a hill of the fineſt and moſt ſplendid ſand, muſt rather claim an artificial origin. At Broſely, in Shropſhire, was a well ſo impregnated with bitumen, that, on the application of a candle, the ſtream took fire, and would boil a tea kettle in nine minutes [26]; but, by opening other coal-pits in the vicinity, this phœnomenon diſappeared; a ſimilar appearance and event alſo occurred in Lancaſhire [27]. But Shropſhire ſtill contains a remarkable well of bitumen, at a place thence ſtyled Pitchford. Cheddar cliffs, in Somerſetſhire, may alſo be mentioned among the natural curioſities; and the Mendip-hills, are not without their caverns, particularly Wookey-hole, near Wells, a ſtalactitic cavern of about 600 feet in length, divided by low paſſages, into various apartments; one of which, called the hall, ſomewhat reſembles a Gothic chapel, and is ſaid to be eighty feet in height; while the furtheſt, ſtyled the parlour, is of moderate height, but extenſive diameter. On the N. W. ſide of the Mendip-hills, is a yet more remarkable curioſity, a conſiderable cavern, at the bottom of a deep ravine, near the little village of Berrington, or Burrington. Here are a number of human bones, gradually incorporating with the lime-ſtone rock; there being a continual dripping from the roof and ſides, which depoſits a ſtalactitic ſediment on the bones. Several nodules contain perfect human ſkulls. At the further end,

* The like ſtone occurs in Ingria, and the palace of Peterhoff is conſtructed with it. The Ammonitic ſtone of Broad Mariton, Somerſetſhire, is another ſingular production.

[26] Phil. Tranſ. No. 334. and 482. [27] Gough's Camden II. 397. 412.

where

where the height is about fifteen feet, there is a large conic ſtalactite, which nearly meets a pillar riſing from the floor. This cave was only diſcovered about two years ago; and as the matter increaſes ſo faſt, it is conjectured that it would ſoon have been cloſed up [23]. Hence it is probable that theſe bones are of no remote antiquity, and may, perhaps, be the remains of ſome wretches who had here taken ſhelter from the cruelty of Jeffries, after the inſurrection of Monmouth *. British Isles.

ENGLISH ISLES.

In the Southern, or Engliſh Channel, firſt appears the Iſle of Wight, by the Romans called *Vectis*, by the Saxons *Vihtlond*, of an oval form, about twenty miles in length, and twelve in breadth. This iſle is fertile and beautiful, and decorated with many pictureſque villas; the principal haven is that of Newport. The chief mineral products are pipe clay, and fine white ſand, for the fabrication of pure glaſs; and at Alum-bay, on the north ſide of the Needles, are found conſiderable quantities of native alum [1]. It is ſaid that more corn was once raiſed in the Iſle of Wight in one year, than the inhabitants could conſume in eight. One of the moſt remarkable buildings is Cariſbrook-caſtle, where Charles I was impriſoned; it was built ſoon after the conqueſt, as appears from the Book of Doomſday. The lofty white rocks, ſtyled the Needles, ſeem to have been diſjoined from the weſtern extremity of the iſle, by the violence of the waves. There were formerly three; but about the year 1782, the talleſt, which roſe about 120 feet above the low-water mark, was overthrown, and totally diſappeared [2]. Iſle of Wight.

[23] Tranſact. of the Linnæan Society, vol. v. Philoſoph. Mag. vii. 146.

* There is a remarkable cave, or rather pit, ſuppoſed to have been an ancient mine, called Penpark-hole, about five miles to the north of Briſtol. A pamphlet, publiſhed by Mr. Catcott, contains the dimenſions of this horrible chaſm, and an affecting account of the fate of Mr. Newnam, who fell into the gulph while he was meaſuring its depth.

[1] Gough's Camden, i. 143. [2] Worſley's Iſle of Wight, p. 274.

At

British Isles.

At the diſtance of about ſeventy miles from Wight, to the S. W. ariſes the little iſle of Alderney, off the Cape la Hogue; which is afterwards followed by the more important iſles of Guernſey and Jerſey; Sark being a ſmall iſle interpoſed between the two latter. Guernſey, the largeſt of theſe iſles, is twelve miles long, nine broad, and about thirty-ſix in circuit. It is a verdant iſle, though the ſoil be hilly, and barren of wood. The only town is that of Port St. Pierre *. Jerſey is about twelve miles in length, and ſix in breadth, a well watered and fertile iſland, producing excellent butter and honey. The winters are milder, but more windy, than thoſe of England. The breed of ſheep, with four or ſix horns, ſeems now unknown. The northern ſide of the iſland is high, but the ſouthern ſubſides into pleaſant vales, covered with orchards. It is ſaid that this iſle has ſometimes produced in one year 24,000 hogſheads of cyder. The remarkable places are the two towns of St. Helier and St. Aubin, both ſtanding on a bay, opening to the ſouth; and the caſtle of Mont Orgueil. The inhabitants of Jerſey are computed at 20,000, of which 3000 are capable of arms. In January 1781, St. Helier was ſurpriſed by 800 French, under Rullicourt, who was killed, while Major Pierſon fell on the ſide of the Engliſh, his valour being commemorated by paintings and prints, and by a handſome monument in the church of St. Helier. Alderney is a ſmall iſle, with a town, and about 1000 inhabitants in all. Sark has about 300 inhabitants [3].

Guernſey.

Jerſey.

Alderney.

Eddiſtone.

Returning to the Engliſh ſhore, we firſt deſcry Eddiſtone light-houſe, beat by all the fury of the weſtern waves. This edifice has repeatedly been overthrown, but the preſent erection by Mr. Smeaton, compoſed of vaſt maſſes of ſtone, grooved into the rock, and joined with iron, promiſes alike to defy accidental fire, and the violence of the ocean, though the waves ſometimes waſh over the very ſummit in one ſheet of foam.

Scilly.

About thirty miles to the weſt of the Land's End, appear the Iſles of Scilly, which have been idly deemed the Caſſiterides of the ancients,

* Guernſey is chiefly remarkable for its ſmall breed of cattle.

[3] Gough's Camden, iii, 753.

though

though theſe rocks be too minute to have attracted their notice. This cluſter pretends to the name of 145 iſles, covered with graſs or moſs, beſides innumerable dreary rocks. The largeſt iſle is that of St. Mary, which is about five miles in circuit, and has a caſtle and garriſon: inhabitants about 600. That of St. Agnes is rather fertile, inhabitants about 300. The whole inhabitants of the Scilly Iſles, are computed at about 1000. The cattle and horſes ſmall; but ſheep and rabbits thrive well. Conſiderable quantities of kelp are prepared amid theſe rocks [a].

Lundy.

On turning to the north, firſt appears the little iſle of Lundy, ſituated in the Briſtol Channel, about three miles long, but not a mile in breadth, with about 500 acres of good land, ſome rivulets, and a caſtle. It was formerly a noted retreat for pirates.

Angleſea

Some ſmall iſles lye off the Welch coaſt of Pembrokeſhire and Caernarvon, ſuch as Caldy, Skomar, Bardſey, and others [*]: but the iſle of Angleſea deſerves more attention, being the Mona of Tacitus, while the Iſle of Man is more properly the Monæda of the ancients. Angleſea is about twenty-five miles in length, and eighteen in breadth. The chief towns are Newburgh, Beaumaris, and, on the weſtern extremity, fronting Ireland, Holyhead. This iſle is ſo remarkably fertile, that the Welch have emphatically ſtyled it the mother of Wales; and of late has been alſo productive of rich copper, found in the Parrys mountain, in the N. E. part of the iſland, near Amluch, of which an account has been given in treating of the Engliſh minerals. This iſle alſo produces green ſerpentine, with aſbeſtos. Beaumaris is a large town, with a caſtle built by Edward I. Newburgh is a corporation of ſmaller moment. Holyhead, originally a fiſhing town, has become of conſequence, by the Iriſh packets which paſs daily, the average time being twelve hours.

Man.

The laſt Engliſh iſle worth mention, is that of Man; it is about thirty miles in length, and fifteen in its greateſt breadth. In the midſt is a high mountain, called Snafel. The chief mineral productions are black marble, ſlate, lime-ſtone, lead, copper, and iron. Man is alſo

[a] Gough's Camden, iii. 753.

[*] Barry, a ſmall iſle, S. W. of Cardiff, is latterly noted for ſulphate of ſtrontian, alſo found at Old Paſſage, fourteen miles N. W. of Briſtol, and near Mendip hills.

British Isles.

well ſtored with black cattle, and ſheep; and the population has of late years greatly increaſed. This iſle was ſeized by the Norwegians, along with the Weſtern Iſles of Scotland, in the ninth century; and remained under theſe lords an independent kingdom, till the thirteenth century, when it fell with thoſe iſlands, to Alexander III of Scotland. The Scots were expelled in the reign of Edward II, but the title continued dubious, for in the 15th and 16th centuries, Alexander and John, Dukes of Albany, ſtyled themſelves Lords of Man, and interwove the arms in their heraldry. In the reign of Henry IV, the kingdom of Man was conferred on the Stanleys, afterwards Earls of Derby, and latterly paſſed to the family of Athol by marriage. This petty ſovereignty has been ſince purchaſed and annexed to the Engliſh crown. The chief places are Douglas and Caſtletown, and there are ſome conſiderable villages.

Thanet.

There are alſo ſome ſmall iſlands off the eaſtern coaſt, as Lindisfarn, and Coquette iſland, near the mouth of the river of that name, in Northumberland. The Iſle of Thanet is now joined to the land of Kent; but Sheppey remains a pleaſant and intereſting iſle.

SCOTLAND.

CHAPTER I.

Names.—Extent.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs.—Antiquities.

SCOTLAND was firſt diſcovered to the Romans by Agricola; and the luminous pages of Tacitus diſcloſed the ſituation and manners of the country. It is not improbable that the Thule of the Phœnicians may have been the main land of Shetland; or, perhaps, as ſome think, even the north of Scotland, which the Phœnicians, ſtanding out to ſea, and afterwards bending their courſe towards the land, may have miſtaken for another iſland, a circumſtance not unuſual in the annals of navigation. However this be, not even a hint that can be poſitively applied to Scotland, can be found in the ancient writers, till the Flavian family held the Roman ſceptre. NAMES.

Tacitus diſcriminates the northern part of Britain from the ſouthern, by the ſpecial and repeated appellation of Caledonia, a name ſaid to be derived from a Cumraig word, ſignifying woodlands, foreſts, or, perhaps, rather a mountainous country, for the ancients often blended the ideas of foreſt and mountain; the Riphæan mountains, for inſtance, being, in fact, only a vaſt foreſt, as no mountains are to be found in that ſituation and direction.

The names *Caledonia*, and *Caledonians*, continued to be uſed till the Roman power expired. Bede, the father of Engliſh hiſtory, calls the

Names. inhabitants of the country, by the name of *Picti*, which had alſo been uſed by the later Roman writers, as ſynonymous with that of *Caledonii*. The country he denominates, in the lax barbaric Latin of that age, *Provincia Pictorum*, the province, or region of the Picti. This new name ſeems to have been native (Piks, or Pehts); and to have originated from a country ſo ſtyled, in the ſouth of Norway, whence this colony had arrived. The Saxon writers, and among them King Alfred, call the people Peohts, and the country Peohtlond.

Theſe diſtinctions continued till the eleventh century, when the new name of Scotia, was taken from Ireland, its former object, and applied to modern Scotland. This confuſion ſeems to have originated from the vanity or affectation of the Iriſh clergy, who were eſtabliſhed in Scotland, and were the ſole inſtructors of the people; no native Caledonian ſaint being mentioned in the eccleſiaſtic annals, till the twelfth century, the Picti retaining much of the ignorance and ferocity of their Scandinavian progenitors. Nor can the new term *Scotland*, be properly derived from any pretended conqueſt of the Picti, by the Attacotti, a colony of Scots or Iriſh, who had ſettled in Argyleſhire, as the Saxon and Iriſh authors continued to uſe the former appellations for three centuries after that event is ſaid to have happened.

Extent. That part of Great Britain, called Scotland, is about 260 miles in length, by about 160 at its greateſt breadth; it extends from the 55th degree of latitude, to more than 58½. The ſuperficial contents have been computed at 27,793 ſquare miles, a little exceeding that of Ireland, and conſiderably more than half that of England. The population being eſtimated at 1,600,000, there will of courſe be only fifty-ſeven inhabitants, for every ſquare mile, a proportion of about one third to that of Ireland. This defect of population ariſes ſolely from the mountainous nature of the country, amounting, perhaps, to one half, little ſuſceptible of cultivation.

Original Population. So far as hiſtorical reſearches can diſcover, the original population of Scotland, conſiſted of Cimbri, from the Cimbric Cherſoneſe. About two centuries before the Chriſtian æra, the Cimbri ſeem to have been driven to the ſouth of Scotland by the Caledonians or Picti, a Gothic colony from Norway. The Cimbri, a congenerous people with the

Welch,

Welch, continued to hold the country ſouth of the two firths of Forth and Clyde; but from the former region they were ſoon expelled by the Picti, who, in this corner, became ſubject for a time to the Anglo-Saxon kings of Bernicia. On the weſt, the Cumráig kingdom of Strath Clyde continued till the tenth century, when it became ſubject to the kings of North Britain; who at the ſame time extended their authority, by the permiſſion of the Engliſh monarchs, over the counties of Cumberland and Weſtmoreland, which abounding with hills and fortreſſes on the ſouth and eaſt, were little acceſſible to the Engliſh power; and while the Danes poſſeſſed the country to the north of the Humber, could yield little revenue or ſupport to the Anglo-Saxon monarchs. From the Picti originates the population of the Lowlands of Scotland, the Lowlanders having been in all ages a diſtinct people from thoſe of the weſtern Highlands, though the Iriſh clergy endeavoured to render their language, which was the moſt ſmooth and cultivated of the two, the polite dialogue of the court and ſuperior claſſes. About the year of Chriſt 258, the Dalriads of Bede, the Attacotti of the Roman writers, paſſed from Ireland to Argyleſhire, and became the germ of the Scottiſh Highlanders, who ſpeak the Iriſh or Celtic language, while the Lowlanders have always uſed the Scandinavian, or Gothic. Names, &c.

The progreſſive geography of Scotland, is little opulent in materials. In the ſecond century we find a map of North Britain, by Ptolemy; but by ſome ſingular error, it is as inaccurate as his map of Hindoſtan; for he repreſents the Mull of Galloway as the moſt northern promontory of Scotland, and thence bends the country due eaſt, ſo that all his longitudes and latitudes are fictitious. This ſtriking inſtance evidences that he often accommodated his longitudes and latitudes, from mathematical conjecture, to careleſs ſketches which had been taken by the Roman engineers, or by navigators. But his diſtribution of the tribes which then inhabited Scotland, may be regarded as tolerably exact. In the centre of the country he places a vaſt foreſt, which he calls the Sylva Caledonia, chiefly extending over modern Perthſhire, an indication that the colonies had ſettled on the ſhores, and that the interior part of the country was little known. The Otadeni were the people of modern Northumberland and Lothian; the Selgovæ extended over Progreſſive Geography.

NAMES, EXTENT, &c.

Dumfrieſhire, and Kirkudbright, to the bay of Wigton, while the Novantæ filled modern Wigtonſhire, and extended upwards to Ayre-bay. The fourth ſouthern tribe was that of the Damnii, who poſſeſſed the central region, from near the ſource of the Clyde, to that of the Erne. On the north-caſt of the Damnii were the Venicontes, from the Frith of Forth to the River Dee, while the Texali held the modern ſhires of Aberdeen and Bamf. To the weſt of them were the Vacomagi, extending from Fort William to the Caſtra Alata or Inverneſs. The other tribes ſcarcely deſerve enumeration: the Cornabii poſſeſſed the moſt northern parts of Scotland, from Dunſby-head to Strathnaver. Four tribes extend along the north-weſt, down to Loch Linny; to the ſouth of which are placed the Epidii, in Argyleſhire, who were divided by Loch Fyn from the Gadeni, who held that part to the eaſt of Argyleſhire, called Cowal, in the county of Dumbarton.

After the time of Ptolemy little information ariſes concerning the geography of Scotland, till, after the lapſe of ſeven or eight centuries, we find the dawn of the preſent names and diviſions. In the latter Roman period, the province of Valentia embraced that part which was ſouth of the Clyde and Forth; as for a ſhort ſpace, from about A. D. 140 to 170, the name of Veſpaſiana had been imparted to the region extending from the Forth to Loch Neſs. The remains of Roman roads form the chief evidence of the firm poſſeſſion of the latter province.

In the middle ages, the name of Albany had been applied to that part of Scotland which lies on the north of the Firths; and about the year 1200, was written the *Deſcriptio Albaniæ*. In the fourteenth century, Fordun produced a larger and more preciſe idea of Scotiſh geography. Harding, who wrote his rhyming Chronicle in the reign of Edward IV, gives a tolerably exact deſcription of Scotland, which he had viſited; and ſome manuſcripts of his work contain a rude map of the country. It muſt be obſerved, that the miſapprehenſions of Ptolemy concerning the due poſition of North Britain, are rectified, even in old Anglo-Saxon drawings. The firſt engraved map is that publiſhed by Biſhop Leſley, with his Hiſtory; but it abounds with portentous errors, which have been ſlowly removed. The Atlas publiſhed in the laſt century,

century, does honour to the induſtry and abilities of Pont, and the munificence of Sir John Scott; and the recent exertions of Dorret, Roy, Mackenzie, Huddard, Ainſlie, and others, have contributed to eſtabliſh ſome exactneſs in the geographical and hydrographical delineation of the country. NAMES, EXTENT, &c.

The original population of Scotland by the Cimbri, and by the Picti, forms, as uſual, the firſt hiſtorical epoch. Hiſtorical Epochs.

2. The entrance of Agricola into Scotland, and the ſubſequent conflicts with the Romans, till the latter abandoned Britain.

3. The ſettlement of the Dalriads, or Attacotti, in Argyleſhire, about the year 258, and their repulſion to Ireland about the middle of the fifth century.

4. The commencement of what may be called a regular hiſtory of Scotland, from the reign of Druſt, A. D. 414.

5. The return of the Dalriads, A. D. 503, and the ſubſequent events of Dalriadic ſtory.

6. The introduction of Chriſtianity among the Caledonians, in the reign of Brudi II, A. D. 565.

7. The union of the Picti and Attacotti, under Kenneth, A. D. 843.

8. The reign of Malcolm III, A. D. 1056; from which period greater civilization began to take place, and the hiſtory becomes more authentic.

9. The extinction of the ancient line of kings, in the perſon of Margaret of Norway, grand-daughter of Alexander III, A. D. 1290. This event occaſioned the arbitrary interpoſition of Edward I, king of England, which was the ſole ſource of the enmity which afterwards unhappily prevailed between the kingdoms.

10. The acceſſion of the Houſe of Stuart to the Scotiſh throne; a family which produced moſt ingenious and intelligent, but moſt unfortunate princes.

11. The eſtabliſhment of the Proteſtant religion, A. D. 1560.

12. The union of the two crowns, by the acceſſion of James VI to the Engliſh ſceptre, A. D. 1603.

13. The

Historical Epochs.

13. The civil wars, and the ſubſequent diſputes between the Preſbyterians and Independants; cauſes that extinguiſhed all ſound literature in Scotland, for the ſpace of twenty years, A. D. 1640—1660.

14. The revolution of 1688, and the firm eſtabliſhment of the Preſbyterian ſyſtem.

15. The union of the two kingdoms, in 1707.

16. The abolition of the hereditary juriſdictions, 1755, which laid the firſt foundation of the ſubſequent proſperity in Scotland.

Antiquities.

The monuments of antiquity belonging to the more early epochs, may be conſidered in the following order. Of the firſt epoch, no monuments can exiſt, except thoſe of the tumular kind; and it is impoſſible to aſcertain the period of their formation. The remains of the Roman period in North Britain, chiefly appear in the celebrated wall, built in the reign of Antoninus Pius, between the firths of Forth and Clyde, in the ruins of which many curious inſcriptions have been found. Another ſtriking object of this epoch, was a ſmall edifice, vulgarly called Arthur's Oven, which ſeems rightly to have been regarded by ſome antiquaries, as a ſmall temple, dedicated to the God Terminus, probably after the erection of the wall of Antoninus, for we are not to conceive that theſe walls were the abſolute lines, beyond which the Romans poſſeſſed no territory; while, on the contrary, in the pacific intervals, the garriſons along the wall may have claimed the forage of the exterior fields; and the ſtream of Carron, beyond which this chapel ſtood, may have been conſidered as a neceſſary ſupply of water. The remains of the wall and forts, and other Roman antiquities in Scotland, particularly their camps and ſtations, many of which are remarkably entire, are ably illuſtrated in a late publication of General Roy, to which this reference muſt ſuffice, with this ſole remark, that the ingenious author has too implicitly followed a common antiquarian error, in aſcribing all theſe camps, ſtations, &c. to Agricola, while they may be more juſtly aſſigned to Lollius Urbicus, A. D. 140, or to the Emperor Severus, A. D. 207; eſpecially, indeed, to the latter, for the Emperor's appearance in perſon to conduct two campaigns, probably as far as Inverneſs, muſt have occaſioned the erection of works more eminent

eminent and durable than uſual, the ſoldiers being excited by the animating controul of a military monarch. Conſtantius Chlorus alſo, A. D. 306, made a long progreſs into Scotland, if we truſt the Panegyriſts. Nay, in the reign of Domitian, Bolanus, as we learn from Statius the poet, erected ſeveral works in Britain, probably in the north; ſo that it is idle to impute theſe remains to any one author: but to a judicious eye, the claims of Lollius Urbicus, and of Severus, ſeem preferable. The moſt northerly Roman camp yet diſcovered, is that near the ſource of the River Ythan, Aberdeenſhire; periphery about two Engliſh miles. A ſmaller ſtation has alſo been obſerved at Old Meldrum, a few miles to the S. E. ANTIQUITIES.

Roman roads have been traced a conſiderable way in the eaſt of Scotland, as far as the county of Angus, affording ſome evidence of the exiſtence of the province Veſpaſiana; but the chief remains are within the wall. A hypocauſt was alſo diſcovered near Perth, and another near Muſſelburgh, ſo that there was, probably, ſome Roman ſtation near the Scotiſh capital, but the name of Alaterva is a ridiculous error, ariſing from an inſcription, by ſome foreign cohort, to obſcure goddeſſes of their own country, ſtyled *Matres Alatervæ*. The ſmaller remains of Roman antiquity found in Scotland, as coins, utenſils, &c. are numerous.

With the fourth epoch may be ſaid to commence the Pikiſh monuments of antiquity. The tombs it would be difficult to diſcriminate from thoſe of the firſt epoch; but as the Caledonian kings, when converted to Chriſtianity, held their chief reſidence at Inverneſs, the ſingular hill in its vicinity, preſenting the form of a boat reverſed, may, perhaps, be a monument of regal ſepulture. The places of judgment among the Gothic nations, or what are now ſtyled Druidic temples, are numerous; and there is a remarkable one in the Iſle of Lewis, where, probably, the monarchs reſided in the moſt early times; but this, perhaps, rather belongs to the Norwegian ſettlement in the ninth century. Some of theſe monuments are of ſmall circuit, and ſuch are ſometimes found at no great diſtance from each other; as they were not only ſometimes erected merely as temples to Odin, Thor, Freyga, and other gothic deities, but every chief, or lord of a manor, having

juriſdiction

Antiquities. juriſdiction over many ſervants and ſlaves, ſuch ſmall courts became places of neceſſary awe.

The houſes ſeem to have been entirely of wood or turf; but in ſome ſpots ſingular excavations are found rudely lined with ſtone: theſe are called *Weems*, and it is likely that they were always adjacent to the wooden reſidence of ſome chief, and were intended as depoſitories of ſtores, &c. the roofs being too low for comfortable places of refuge. The ſtations and camps of the natives, are diſtinguiſhed by their round form, while thoſe of the Romans belong to the ſquare.

Under the next epoch it would be difficult to diſcover any genuine remains of the Dalriads. The houſes, and even churches, were conſtructed in wattle-work; and the funeral monuments were cairns, or heaps of ſtones. It is probable that Chriſtianity did not immediately diſſolve ancient prejudices, and that even the Attacottic kings were buried in this rude manner, for the genuine chronicles do not affirm that they were conveyed to Hyona, or Icolmkill; and the ſepulchres there ſhewn of Iriſh and Norwegian kings, muſt be equally fabulous.

To the ſixth epoch may probably belong a chapel or two, ſtill remaining in Scotland, for Bede informs us, that Nethan III, A. D. 715, obtained architects from Ceolfrid, abbot of Jarrow and Weremouth, to build a church in his dominions, probably at Abernethy; but the round tower there remaining, ſeems of more recent origin. About the year 830, Unguſt II founded the church of St. Andrews; and the chapel called that of St. Regulus, (who ſeems unknown in the Roman calendar,) may, perhaps, claim even this antiquity. It is probable that theſe ſacred edifices in ſtone were ſoon followed by the erection of thoſe rude, round piles, without any cement, called Piks houſes: yet they may more properly belong to

The ſeventh epoch, when the Danes may, if they chooſe, ſhare in the honour of the erection, for ſuch edifices have been traced in Scandinavia. They ſeem to have conſiſted of a vaſt hall, open to the ſky in the centre, while the cavities in the wall preſent incommodious receſſes for beds, &c. Theſe buildings are remarkable, as diſplaying the firſt elements of the Gothic caſtle; and the caſtle of Coningſburg, in Yorkſhire,

Yorkſhire, forms an eaſy tranſition. The engraved obeliſks, found at Forres, and in other parts of Scotland, have been aſcribed to the Daniſh ravagers, who had not time for ſuch erections. They are, probably, monuments of ſignal events, raiſed by the king or chiefs, and as ſome are found in Scandinavia, as recent as the fifteenth century, it is probable that many of the Scotiſh obeliſks, are far more modern than is generally imagined. HISTORICAL EPOCHS.

To enumerate the churches and caſtles, erected ſince the reign of Malcom III, would be infinite. Some of the moſt ſplendid churches derive their foundation from David I, in the twelfth century.

CHAPTER II.

Religion. — Eccleſiaſtical Geography. — Government. — Laws. — Population. — Colonies.

RELIGION. SINCE the revolution, 1688, the Eccleſiaſtical Government of Scotland is of the Preſbyterian form; an eſtabliſhment attempted in the ſixteenth century, but uniformly oppoſed by the monarchs, as unfavourable to the royal influence. Experience has ſhewn that the prejudice was unfounded; but violent commotions happened before the Preſbyterian triumph became firm. The number of pariſhes in Scotland is 941 [1]; contiguous pariſhes unite in what is called a Preſbytery, of which denomination there are ſixty-nine. The provincial ſynods amounting to fifteen, are compoſed of ſeveral adjacent preſbyteries: but the grand eccleſiaſtical court is the General Aſſembly, which meets every year, in the ſpring, the king appointing a commiſſioner to repreſent his perſon, while the members nominate their moderator or preſident. To this eccleſiaſtic council laymen are alſo admitted, under the name of Ruling Elders, and conſtitute about one third of this venerable body. This Court diſcuſſes and judges all clerical affairs, and admits of no appeal, except to the parliament of Great Britain. In general the Scotiſh clergy deſerve the higheſt praiſe, as men of enlightened minds, and moderate conduct; and a ſingular proof of the diffuſion of talents among them, has recently appeared in the Statiſtical Account of Scotland, publiſhed by Sir John Sinclair, in twenty-one volumes; for there are few pariſhes of which the account is not ably delineated by the clergyman himſelf; a phœnomenon in the literary world, which will hardly be rivalled by 900 philoſophers, or rather theoriſts of the modern ſchool.

As whatever eſtabliſhment is effected in a free country, oppoſition will always ariſe, the eſtabliſhment of the Preſbyterian ſyſtem, was, in

[1] Statiſt. Account.

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the ſpace of one generation, followed by the ſeceſſion. In 1732, about forty miniſters preſented an addreſs to the general aſſembly, ſpecifying ſeveral defections, which, in their opinion, had taken place, from the original conſtitution of the church, which, in truth, had too much of the rigour of Calvin. Some of the ſeceders were deprived of their livings by a committee of the general aſſembly. Perſecution, as uſual, produced followers, and the ſeceders ſoon formed a numerous party. About the year 1747, they were themſelves divided into two denominations, called the Burghers and the Anti-burghers, becauſe the diviſion aroſe concerning the legality of the oaths taken by the burgeſſes of ſome of the royal boroughs; the former allowing that the oath is proper, while the latter object; the former are the more numerous, the number of their miniſters being computed at about 100, and at a medium each has a congregation of about 1000. Religion.

Many reſpectable families in Scotland, embrace the epiſcopal form of the Church of England. The other deſcriptions of religious profeſſions, are not numerous. There are but few Roman Catholics, even in the remote Highlands, the ſcheme of education being excellent, and generally ſupported with liberality.

To delineate the Eccleſiaſtical Geography of Scotland, would be to enumerate its pariſhes; nor are the preſbyteries and ſynods of ſuch account as to influence the fate of the towns where they aſſemble. The ancient eſtabliſhment compriſed two archbiſhoprics, thoſe of St. Andrews and Glaſgow; and eleven biſhoprics (that of Edinburgh having only been eſtabliſhed by Charles I) which, in the order of antiquity, may be thus enumerated; Galloway (St. Andrews) Dunkeld, Moray: five founded by David I, Brechin, Dumblane, Aberdeen, Roſs (Glaſgow); that of Argyle, or Liſmore, was founded about the year 1200, becauſe the biſhops of Dunkeld did not ſpeak the Iriſh tongue. The biſhops of Orkney, and of the Weſtern Iſlands, date from an early period, while their ſees were not ſubject to the Scotiſh crown. Eccleſiaſtic Geography

The Government of Scotland, ſince the union, has been blended with that of England. The chief diſtinction between the original conſtitution of the two countries, was, that Scotland had no houſe of com- Government

Government. mons, the parliament, conſiſting of all deſcriptions, aſſembled in one hall. That enlightened prince, James I, of Scotland, endeavoured to eſtabliſh a houſe of commons, in imitation of that of England, where he was educated; but the people moſt firmly and vigorouſly defended their ſlavery. The moſt ſplendid remaining feature of government in Scotland, is the General Aſſembly. Next to which may be claſſed the high courts of juſtice, eſpecially that ſtyled the Seſſion, conſiſting of a preſident, and fourteen ſenators. The Lords of Seſſion, as they are ſtyled in Scotland, upon their promotion to office, aſſume a title, generally from the name of an eſtate, by which they are known and addreſſed, as if peers by creation, while they are only conſtituted lords by ſuperior intereſt or talents. This court is the laſt reſort in ſeveral cauſes, and the only appeal is to the parliament of Great Britain. It is to be regretted, that the cauſes are not determined by jury as in England. The juſticiary court conſiſts of five judges, who are likewiſe lords of ſeſſion, but with a preſident ſtyled the Lord Juſtice Clerk, as he is only underſtood to repreſent the formerly great office of Juſtice General. This is the ſupreme court in criminal cauſes, which are determined by the majority of a jury, and not by the unanimity, as in England. There is alſo a Court of Exchequer, conſiſting of a Lord Chief Baron, and four Barons; and a High Court of Admiralty, in which there is only one judge. The keepers of the great and privy ſeals, and the lord regiſter, or keeper of the records, may alſo be mentioned under this head.

Laws. The law of Scotland differs eſſentially from that of England, being founded, in a great meaſure, upon the civil law. It partly conſiſts of ſtatute law; but many of the ancient ſtatutes never having been enforced, the chief rule of this ſort ariſes from the deciſions of the ſeſſion, which are carefully preſerved and publiſhed, and afford precedents, generally deemed unexceptionable. Of common law there is hardly a trace, while the civil and canon laws, may be ſaid to form the two pillars of Scotiſh judicature. The modes of procedure have, however, the advantage of being free from many of thoſe legal fictions, which diſgrace the laws of ſome other countries. It may, indeed, be deemed a fiction, that a debtor, who refuſes or neglects to pay, ſhould be proclaimed a rebel to the

the king, and as it is called, *put to the horn*, before he can be impriſoned. The inferior courts are thoſe of the ſheriffs, magiſtrates, and juſtices of the peace. Under the hereditary juriſdictions, happily aboliſhed, the peers, and other great men, maintained a power, almoſt abſolute, over their tenants and followers, ſo that there was no law but the will of the maſter, and the cities alone could be deemed ſeats of freedom. GOVERNMENT.

The moſt exact account of the population of Scotland, is that given in the Statiſtical Account [2], from which it appears that the amount, in 1798, was 1,526,492; while, in 1755, it was only 1,265,380; the increaſe, therefore, is 261,112. The moſt populous counties are, in the order of numbers, Perth, 133,274; Lanark, 125,254; Aberdeen, 122,921; Mid-Lothian, 122,655; Forfar, 91,001; Fife, 87,250; Argyle, 76,101. Population.

There are no Scotiſh colonies diſtinct from thoſe of England; that of Darien, attempted in the reign of William III, was unſucceſsful. Nor is this to be regretted, as it is now perfectly underſtood that the climate is unhealthy, and unfit for any ſettlement, ſo that the Spaniards themſelves have neglected it. Colonies.

The army, navy, revenues, political importance and relations of Scotland, are now inſeparably intermingled with thoſe of England.

[2] Vol. xx. p. 620.

CHAPTER III.

Manners and Cuſtoms.—Language.—Literature.—Education.—Univerſities.—Cities and Towns.—Edifices.—Inland Navigation.—Manufactures and Commerce.

MANNERS AND CUSTOMS.

THE Manners and Cuſtoms of the Scots, begin to be much aſſimilated with thoſe of Engliſh. In their religious ceremonies, attending baptiſm and marriage, there are variations, ariſing from the Preſbyterian form, which does not admit of godfathers or godmothers, but renders the parents alone anſwerable for the education of the child. The clergyman does not attend at funerals, nor is there any religious ſervice; but generally great decency. The hearſe ſeems a more appropriated machine than the cloſe waggon ſo called in England, being a light and lofty carriage, of trellice work, painted with black, and ſpotted with the reſemblance of falling tears, an idea derived from the ancient French ceremonies, as may be obſerved in the collection by Montfaucon. Among the lower claſſes, the funerals are generally far more numerouſly attended than in England; nor is black an indiſpenſable colour of dreſs on ſuch occaſions.

In the luxuries of the table, the ſuperior claſſes rival the Engliſh, and the gentlemen are, perhaps, rather more fond of wine. The abundance and beauty of the table-linen are deſervedly praiſed by ſtrangers: ſeveral national diſhes, formerly ſerved up at the beſt tables, and originating from the French cooking, in the reign of Mary, are now common or neglected, ſuch as the haggis or *hachis*; cock-a-leekie, or a capon boiled down with leeks; crapped heads, or haddocks ſtewed, the heads being ſtuffed with a kind of forced-meat balls, &c. &c. The diet of the lower claſſes paſſes in a gradual tranſition from the north of England. The chief food is *parich*, or thick pottage, formed with oatmeal and water, and eaten with milk, ale, or butter; in a hard lumpy form it is called *broſe*. With this the labourer is generally contented twice or thrice in the

the day, with a little bit of meat for Sunday; nor does he repine at the bacon of the Engliſh poor, as it is a food which he commonly loathes, there being an ancient antipathy to ſwine, as impure animals, into which the dæmons paſſed, as mentioned in the New Teſtament. A ſimilar antipathy prevails againſt eels, as they reſemble a ſerpent, and the old ſerpent. The lower claſſes of Scotland were little given to ebriety, till a ſucceſſion of improvident laws and regulations, reduced the wholeſome malt liquors to mere water, when they were driven to the deſtructive beverage of whiſky; but in general their ſobriety is exemplary; and the Scotiſh manufacturer or labourer, inſtead of waſting his weekly gains at an alehouſe, is ambitious to appear with his family in decent clothes, on Sundays and other holidays. This may be regarded as a ſtriking characteriſtic of the Scotiſh peaſantry, who always prefer the laſting decencies of life, to momentary gratifications. To this praiſe of ſobriety, may be added that of intelligence, ariſing from the diffuſion of education, which is ſuch, that even the miners in the ſouth poſſeſs a circulating library.

The houſes of the opulent have been long erected upon the Engliſh plan, which can hardly be exceeded for interior elegance and convenience. Even the habitations of the poor have been greatly improved within theſe few years, and inſtead of the mud hovel, with ſtraw, there often appears the neat cottage of ſtone, covered with tile or ſlate. Whence the ancient cuſtom aroſe, of placing the dunghill in the front of the houſe, cannot well be imagined; perhaps it was intended in defence, and if ſo, is uſeleſs in pacific times; perhaps it is meant as a diſplay of opulence, in which caſe it is hoped that good ſenſe will extinguiſh ſuch ſuperfluous vanity.

The dreſs of the ſuperior claſſes, is the ſame with that of the Engliſh, and only waits the arrival of the faſhions from London, which are conveyed by the mail-coaches with great ſpeed. The gentlemen in the Highlands, eſpecially in time of war, uſe the peculiar dreſs of that country. Among the other claſſes, the Scotiſh bonet is now rarely perceived, except in the Highlands; it was the uſual covering for the head all over Europe, till towards the end of the 16th century, when the hat, formerly

Manners and Customs.

only worn in riding or hunting, came into general uſe. The Scotiſh peaſantry are now generally cloathed in good broad cloth, worſted ſtockings, and ſtrong ſhoes, inſtead of the home-ſpun habiliment, and nudity of the lower extremities. This laſt ſingularity, common in Wales, and even in England about two centuries ago, is moſtly abandoned even by the Scotiſh laſſes, who may now aſpire to the order of the garter. In the Highlands, it is to be regretted, that a diſtinction of dreſs ſtill prevails, as any variation in dreſs or language only foſters prejudices, and proves the moſt fatal impediment to the progreſs of civilization. Even in theſe enlightened times, if any nation were to return to the ſtate of nudity, a philoſopher could hardly avoid the idea, that they were ſavages; and the maſs of mankind would certainly conſider them as ſuch, for trifles often lead to the moſt ſerious evils.

The amuſements of the rich are on a parallel with thoſe of the Engliſh; but thoſe of the peaſantry have ſeveral diverſities, which the reader may, perhaps, beſt learn from the poems of Burns. That of *curling* conſiſts in rolling large ſtones, with iron handles, upon the ice, towards a fixed mark, a favourite and healthy diverſion in the winter. The Engliſh quoits are ſupplied by *penny-ſtanes*, round flat ſtones, which are toſſed in the ſame manner. Two exquiſite poems of Mr. Burns, his *Halloween* and his *Cotter's Saturday Night*, will convey more information concerning the amuſements, ſuperſtitions, and manners, of the Scotiſh peaſantry, than the moſt long and animated detail.

Language.

The Scotiſh language falls under two diviſions, that of the Lowlands conſiſting of the ancient Scandinavian dialect, blended with the Anglo-Saxon; and that of the Highlands, which is Iriſh. A ſtrict examination of the former, by an unprejudiced enquirer, would evince that it does not originate ſolely from the Anglo-Saxon, as ſome conceive, the mode of ſpelling and pronouncing numerous words, being unknown to the ſouthern idiom: Of this, among other inſtances, may be mentioned the *qu* of the Caledonians, an old Gothic combination, for which Ulphilas invented a letter, and for which the Anglo-Saxons uſed the *w*; as *quhat* for *what*, &c. But this is not the place for ſuch diſcuſſions; and

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it will be ſufficient to produce the uſual ſpecimen, which, in the moſt ancient language of the Lowlands, would be as follows: Language.

Uor fader quhilk beeſt i Hevin. 2. Hallowit weird thyne nam. 3. Cum thyne kingrik. 4. Be dune thyne wull as is i hevin ſva po yerd. 5. Uor dailie breid gif us th'ik day. 6. And fo.leit us uor ſkaths, as we forleit tham quha ſkath us. 7. And leed us na intil temtation. 8. Butan fre us fra evil. Amen.

The iſlands of Orkney were ſeized by the Norwegians, in the ninth century, and the inhabitants retained the Norſe language, till recent times, when they began to ſpeak remarkably pure Engliſh. Chamberlayne has given the Lord's Prayer in their ancient dialect:

Favor ir i chimre. 2. Helleur ir i nam thite. 3. Gilla coſdum thite cumma. 4. Veya thine mota vara gort o yurn ſinna gort i chimrie. 5. Ga vus da on da dalight brow vora. 6. Firgive vus ſinna vora ſin vee firgive ſindara mutha vus. 7. Lyve us ye i tuntation. 8. Min delivera vus fro olt ilt. Amen; *or*, On ſa meteth vera.

In the Erſe, or Iriſh, of the Highlands, the ſame ſupplication runs thus:

A n'Athair ata air Neamh. 1. Gu naamhaichear t Tinm. 2. Tigeadh do Rioghachd. 3. Deanthar do Thoil air an Tálamh mar a nithear air Neamh. 4. Tabhair dhuinn an diu ar n Aran laitheil. 5. Agus maith dhuinn ar Fiacha amhuil mar mhaithmid d'ar luchd—ſia chaibh. 6. Agus na leig am buaireadh ſinn. 7. Ach ſaor ſinn o Ole. Amen.

The Literature of Scotland recompences for its recent origin, by its rapid progreſs, and extenſive fame. The country that produced Buchanan, in the 16th century, could not, in the twelfth, boaſt of one native writer; and only national vanity, or affected ignorance, would claim authors which really belong to other countries. In the 13th century, the native literature firſt begins to dawn; when Scotland, filled with a barbarous Scandinavian colony, muſt not in this reſpect be compared with the ſouthern countries of Ireland and England, but with Scandinavia itſelf, with Holland, and the North of Germany, Poland, Pruſſia, Ruſſia, and Hungary; in all which countries Chriſtianity and literature are comparatively recent. Literature.

Yet, it muſt not be forgotten, that in the ſacred ground of Hyona, flouriſhed ſeveral reſpectable Iriſh writers, who are alſo claſſed among the apoſtles of religion and learning in England; Such were Columba, who converted the northern Caledonians, and his biographers, Cumi-

Literature. nius and Adomnan, the latter the friend of Bede. Among the Strath-clyde Welch, may be named Patrick, in his turn the apoſtle of Ireland.

Independently of theſe, the moſt ancient fragment remaining of Scotiſh literature, is the *Chronicon Pictorum*, written by ſome Iriſh clergyman, probably a dignitary of the church of Abernethy, in the beginning of the eleventh century. Of the twelfth century there are ſome fragments, in the Regiſter of St. Andrews; and ſome ſhort Chronicles publiſhed by Innes: the Chronicle of Melroſe, and that of Holyrood.

One of the earlieſt native writers, is Thomas of Erceldon, called the Rimer, who flouriſhed about the year 1270, and wrote a metrical romance, called Sir Triſtram, now unfortunately loſt. The next author of note is John Barbour, Archdeacon of Aberdeen, who wrote his poem on the actions of Robert I, in the year 1375, no mean monument of induſtry and talents for that period. At the ſame time flouriſhed John Fordun, the father of Scotiſh hiſtory. James I, of Scotland, wrote ſome excellent poems, early in the fifteenth century; and he was followed by Holland, and Henry the Rimer. In the end of that century aroſe Dunbar, the chief of the ancient Scotiſh poets; and, in the beginning of the next, Gawin Douglas, and David Lindſay. The Scotiſh muſe continued to warble till the middle of the ſeventeenth century, when religious fanaticiſm extinguiſhed all the arts and ſciences, but not before Drummond had woven his web of Doric delicacy. In more modern times, the names of Thomſon, Blair, Armſtrong, Beattie, Burns, &c. are univerſally known.

Rude chroniclers continued the chain of events; but Hiſtory was mute till Buchanan ſounded his claſſical trumpet. Biſhops Leſley and Burnet are not without their merit; but why repeat to the echoes of fame, the illuſtrious names of Hume and Robertſon?

The other departments of ſcience are of yet more recent cultivation in Scotland; even theology ſeems unknown till the beginning of the ſixteenth century; and of medicine there is no trace till the ſeventeenth: while we can now boaſt of Blair; and Edinburgh ranks among the firſt medical ſchools of Europe. Natural philoſophy and hiſtory were

were totally neglected till after the Reſtoration, yet Scotland can now produce able writers in almoſt every branch, and equal progreſs has been made in moral philoſophy. Among the few departments of literature, in which the Scotiſh authors have been unſucceſsful, may be named epic poetry, comedy, and the critical illuſtration of the claſſics. LITERATURE.

The mode of education purſued in Scotland is highly laudable; and is, perhaps, the beſt practical ſyſtem purſued in any country in Europe. The plan which is followed in the cities, is nearly ſimilar to that of England, either by private teachers, or at large public ſchools, of which that of Edinburgh is the moſt eminent, and may be traced from the ſixteenth century. But the ſuperior advantage of the Scotiſh education conſiſts in every country pariſh, poſſeſſing a ſchoolmaſter, as uniformly as a clergyman: at leaſt, the rule is general, and the exceptions rare. The ſchoolmaſter has a ſmall ſalary, or rather pittance, which enables him to educate the children, at a rate eaſy and convenient, even to indigent parents. It may, indeed, be computed, that a ſhilling will go as far in this parochial education, as a guinea in an Engliſh ſchool. In the Highlands, the poor children will attend to the flocks in the ſummer, and the ſchool in the winter. It is to be wiſhed that the ſalary of that moſt uſeful body of men, the parochial ſchoolmaſters, were moderately augmented, ſo as not to elevate them above their duty, but to ſecure them from want, or from the neceſſity of intermingling other labour with their important and ſalutary office. Education.

The univerſities of Scotland, or rather colleges (for an Engliſh univerſity includes many colleges and foundations), amount to no leſs than four; three on the eaſtern coaſt, St. Andrew's, Aberdeen, and Edinburgh; and one on the weſtern, that of Glaſgow. It would have been far preferable to have founded one on the weſtern coaſt of Roſshire, in the centre of the Highlands and Iſles, that the light of ſcience might have been diffuſed over theſe neglected regions. Univerſities.

The univerſity of St. Andrew's was founded by Biſhop Wardlaw, in the year 1412; but as it is now of ſmall importance in the proximity of that of Edinburgh, it would be a patriotic meaſure to tranſfer it to the Highlands as above mentioned. That of Glaſgow was founded by Biſhop Turnbull, in the year 1453, and it has produced many illuſtrious pro-

Universities.

feſſors and able ſtudents. The late Mr. Anderſon, profeſſor of natural philoſophy, founded an inſtitution to promote the knowledge of natural philoſophy and hiſtory; and more eſpecially the application of theſe ſciences, to the uſeful purpoſes of commerce and manufactures[3]. It is, indeed to be wiſhed, that practical utility, and the buſineſs of real life, were the chief intentions of a collegiate education.

The third univerſity, that of Aberdeen, was founded by Biſhop Elphinſtone, in the year 1500, and it has always ſupported its high character and intentions. In the year 1593, George Keith, fifth Earl Marſhal, founded a college at Aberdeen, being the only Scotiſh nobleman who can claim that high honour. The laſt, not leaſt, is that of Edinburgh, founded by James VI, in 1580; and the bare enumeration of its illuſtrious profeſſors and writers, would occupy too much ſpace for the preſent plan. The buildings being mean and confined, the foundation of a new edifice was laid in 1789, and, it is hoped, will ſoon be completed on the magnificent plans adjuſted by Adams.

Cities and Towns.

Edinburgh.

The chief cities and towns in Scotland muſt now be conſidered. Edinburgh, the capital, is comparatively of modern name and note. Maitland, and other antiquaries, have fallen into miſerable miſtakes and miſquotations, concerning the origins of this city: a paſſage of an old writer has been adduced for its exiſtence in 854, while the original is completely ſilent. Whatever may be the epoch of its exiſtence, the earlieſt hint that can be applied to it, occurs in the *Chronicon Pictorum*, about the year 955, where mention is made of a town called Eden, as reſigned by the Engliſh to the Scots, then ruled by Indulf. In the next century, Malcolm III, and Margaret of England, his celebrated queen, are ſaid to have reſided in the caſtle; but her life by Turgot, omits this circumſtance, and Holyrood houſe was the foundation of the firſt David. But Scotiſh antiquities have been treated with ſuch inaccuracy, that crude notions are perpetually ſubſtituted, inſtead of that exact knowledge which is to be found in thoſe of other countries.

The population of Edinburgh, including the port of Leith, was, in 1678, computed at 35,500; in 1755, at 70,430; and in 1791, at 84,886[4]. It is probable the preſent population falls little ſhort of

[3] Garnett's Tour, ii. 193. [4] Statiſt. Account, vi. 564.

90,000

90,000. The arrivals and clearances at Leith Harbour, exceed the number of 1700 veſſels of various deſcriptions, ſhips, brigs, and ſloops. Of theſe 165 belong to the town: the commerce has been ſtated at half a million annually. Cities and Towns.

The houſes in the old town of Edinburgh, are ſometimes of remarkable height, not leſs than thirteen or fourteen floors, a ſingularity aſcribed to the wiſh of the ancient inhabitants, of being under the protection of the caſtle. This part of the city ſtands on the ridge of a hill, gradually deſcending from the lofty precipice on which the caſtle is ſituated, to a bottom, in which ſtands the palace of Holyrood-houſe. Adjacent to this edifice, is a park of conſiderable extent, replete with mountainous ſcenery, for the baſaltic heights of Arthur's ſeat, and Saliſbury crags, are within its precincts. The new town of Edinburgh is deſervedly celebrated for regularity and elegance, the houſes being all of free-ſtone, and ſome of them ornamented with pillars and pilaſters. Brick is, indeed, almoſt unknown in Scotland; and is apt to impreſs the Scotiſh traveller with the ideas of ſlightneſs, and want of duration. There are ſeveral public edifices in Edinburgh, which would do honour to any capital; among ſuch may be named the caſtle, the palace, the principal church, Heriot's hoſpital, the regiſter-office, the new college, and ſeveral buildings in the new city[5]. There is an elegant bridge, reaching from the hill on which the ancient city ſtands, to the elevated ſite of the new town. Another bridge paſſes in a line with the former, towards the ſouth, over a ſtreet called the Cowgate: and an artificial mound extends from the weſtern part of the ridge, to the oppoſite hill. The environs of Edinburgh are ſingularly pleaſing and picturеſque. On the north is an elevated path, leading to the harbour of Leith: on the eaſt are Muſſleburgh and Dalkeith, rural villages, watered by a beautiful ſtream. On the ſouth, Pentland-hills; and towards the weſt, the rivulet Leith, with banks of romantic variety.

The ſecond city in Scotland is Glaſgow, of ancient note, and eccleſiaſtic ſtory, but of ſmall account in the annals of commerce, till the time of Cromwell's uſurpation[6]. The population of Glaſgow, in 1755, was computed at 23,546, including the ſuburbs: the number, in 1791, was Glaſgow.

[5] Arnot's Edinburgh. Kincaid's Do. [6] Denholme's Glaſgow.

eſtimated

Cities and Towns.

eſtimated 61,945. The ancient city was rather venerable than beautiful, but recent improvements have rendered it one of the neateſt cities in the empire. Its weſtern ſituation expoſes it to frequent rains, a diſadvantage recompenced by its favourable poſition for commerce with America and the Weſt Indies. Its commerce has ariſen to great extent ſince the year 1718, when the firſt ſhip that belonged to Glaſgow croſſed the Atlantic[7]. The number of ſhips belonging to the Clyde, in 1790, was 476, the tonnage 46,581; but, before the American war, it was ſuppoſed to have amounted to 60,000 tons. Though the manufactures ſcarcely exceed half a century in antiquity, they are now numerous and important[8]. That of cotton, in 1791, was computed to employ 15,000 looms; and the goods produced, were ſuppoſed to amount to the yearly value of 1,500,000*l.* the manufactures of linens, woollens, &c. are far from being of ſimilar conſequence. The ancient cathedral of Glaſgow ſurvived the reformation, when the other Scotiſh edifices of that denomination ſunk into ruins. Two convenient bridges are thrown over the Clyde. The environs of Glaſgow preſent little remarkable.

Perth.

Next in eminence are the cities of Perth and Aberdeen, and the town of Dundee. Perth is an ancient town, ſuppoſed to have been the Victoria of the Romans, but the fables concerning Bertha are beneath notice[9]. It is pleaſantly ſituated on the weſtern bank of the river Tay; and has been known in commerce ſince the thirteenth century, but at preſent the trade is chiefly of the coaſting kind, Dundee poſſeſſing a more advantageous ſituation for foreign intercourſe. Linen forms the ſtaple manufacture, to the annual amount of about 160,000*l.* There are alſo manufactures of leather and paper. Perth diſplays few public edifices worth notice. Inhabitants about 28,000. There is a noble bridge, of recent date, over the Tay, and the environs are intereſting, particularly the hill of Kinnoul, which preſents ſingular ſcenes, and many curious mineral productions[10].

Dundee.

About eighteen miles nearer the mouth of the Tay, ſtands Dundee, in the county of Angus, a neat modern town. The firth of Tay is here

[7] Statiſt. Account, v. 498. [8] Ib. 502. [9] Ib. xviii. 489, &c.
[10] Anderſon's Muſes Threnodie.

between

between two and three miles broad; and there is a good road for shipping to the east of the town, as far as Broughty-castle. On the 1st of September, 1651, Dundee was taken by storm by General Monk; and Lumisden, the governor perished amidst a torrent of bloodshed. The population is, however, now computed at 24,000; the public edifices are neat and commodious. In 1792, the vessels belonging to the port, amounted to 116, tonnage 8550. The staple manufacture is linen, to the annual value of about 80,000*l*, canvass, &c. about 40,000*l*. Coloured thread also forms a considerable article, computed at 33,000*l*. and the leather tanned at 14,000*l*.[11]. Cities and Towns.

Aberdeen first rises to notice in the eleventh century, and continued to be chiefly memorable in ecclesiastic story. In the fourteenth century it was destroyed by Edward III, of England. The population in 1795, was computed 24,493. Though the harbour be not remarkably commodious, it can boast a considerable trade, the chief exports being salmon and woollen goods. In 1795, the British ships, entered at the port, were sixty-one, the foreign five; and the British ships cleared outwards, amounted to twenty-eight. The chief manufactures are woollen goods, particularly stockings, the annual export of which is computed at 123,000*l*. The coarse linen manufactures are not of much account; but the thread is of esteemed quality. Aberdeen.

The other chief towns of Scotland shall only be briefly mentioned, beginning with the south-east part of the kingdom. Berwick is a fortified town of some note, and carries on a considerable trade in salmon. The vessels built at this port, are constructed on excellent principles. Berwick.

Jedburgh, on the river Jed, which descends from the Cheviot-hills, is chiefly remarkable for the beautiful ruins of an abbey, founded by David I. In the year 1523, it was burnt by the Earl of Surrey, who says that it then contained twice as many houses as Berwick, many of them elegantly built; and it was defended by six strong towers. Jedburgh.

Dumfries stands on a rising ground, on the eastern banks of the Nith, and contains about 6000 inhabitants. Dumfries.

Ayr, the chief town in the S. W. of Scotland, is situated on a sandy plain, on a river of the same name. The chief trade is in grain and coals; Ayr.

[11] Statist. Account, viii. p. 204, &c.

Cities and Towns. and a few veſſels are built. Inhabitants about 7000. Irwin has about 4000.

Lanark. Lanark ſtands in a moſt pictureſque country, near the celebrated falls of the Clyde. It was only noted for its academy, under the management of Mr. Thomſon, brother-in-law of Thomſon the poet, till the recent cotton manufacture, and other erections by the patriotic Mr. Dale, rendered this town ſtill more worthy of attention.

Greenock. Greenock and Port Glaſgow, are conſiderable towns, which have ariſen to celebrity, by ſharing in the trade of Glaſgow. Greenock is ſuppoſed to contain 15,000 inhabitants; Port Glaſgow about 4000. Paiſley, in the ſame county, is celebrated by its manufactures of muſlin, lawns, and gauzes, to the annual amount, it is ſaid, of 660,000*l.* The population amounts to about 20,000. Dumbarton, on the oppoſite ſhore of the Clyde, contains above 2000 ſouls, and is alſo ſubſervient in the manufactures of Glaſgow.

Stirling. Stirling is rather remarkable for its commanding, and truly royal ſituation, than for its induſtry. The inhabitants are computed at 5000. Between Stirling and Edinburgh ſtands Boneſs, formerly called Borrowſtoneſs, in the midſt of collieries and ſalt-works: the harbour is good, and there are about 2600 inhabitants.

The county of Fife contains many towns, ſome of which were in a more flouriſhing ſituation, when Scotland carried on a conſiderable intercourſe with France.

Dunfermline. Dunfermline is a pleaſant town, containing about 5000 inhabitants, and carries on a conſiderable manufacture of diapers. There are ruins of a palace, the royal reſidence in the time of Malcolm III. St. Andrew's has about 2,500; it is chiefly remarkable for its ruined cathedral.

Forfar, in Angus, contains about 3400 ſouls, and the linen manufactures deſerve mention.

Dunkeld. Dunkeld is of venerable and pictureſque fame, but its linen manufactures are inconſiderable. Brechin contains about 5000 people: its products are linen, cotton, and tanned leather. Montroſe has an equal population, and a few manufactures; the buildings are moſtly modern and neat.

The

Cities and Towns.

The county of Mearns preſents no town worth mention. Peterhead, in Aberdeenſhire, contains about 2000 ſouls. It has a mineral ſpring, and carries on ſome trade with the Baltic. Frazerburgh, near the promontory of Kinnaird Head, has alſo a tolerable harbour.

Portſoy.

Portſoy is a ſea-port town, peopled with about 2000 ſouls. In the neighbourhood, are the rocks well known to mineralogiſts, containing elegant granites, of different kinds, ſerpentines, and ſteatites, with their uſual concomitants, aſbeſtos and amianthus.

Elgin.

Elgin, the capital of the county of Moray, boaſts of the remains of an elegant cathedral, and is ſuppoſed to contain 4000 inhabitants.

Inverneſs.

Inverneſs is an ancient and flouriſhing town, the capital of the northern Highlands. The population is computed at 10,000. The chief manufactures are ropes and candles. An academy has lately been founded here on an excellent plan.

The few towns further to the north are of little account. Port Roſe has only 800 ſouls; but Cromarty has about 3000, a ſmall manufacture of coarſe cloth, and ſome coaſting trade in corn, thread, yarn, nails, fiſh, and ſkins. Dingwall contains 700 ſouls, and a ſmall linen manufacture. Tain has about 1000 inhabitants. Dornoch was once the reſidence of the biſhops of Caithneſs: population only 500. After a dreary interval Wick occurs, the laſt town on the eaſtern coaſt; the inhabitants, about 1000, chiefly deal in cod and herrings.

Thurſo, on the northern ſhore, fronting the Orkneys, has manufactures of woollen and linen. Population about 1600.

Inverary.

Hence there is a lamentable void along the weſtern half of Scotland, till we arrive at Inverary, in Argyleſhire, the foundation of the noble houſe of Argyle, after paſſing a ſpace of about 160 miles, where only a few ſcattered hamlets can be found. Inverary is a neat and pleaſant town, of about 1000 ſouls; there are manufactures of linen and woollen, and a conſiderable iron-work. The ore is brought from the weſt of England, and is ſmelted with charcoal from the woods of Argyleſhire.

Campbeltown.

In the ſame county is Campbeltown, a royal borough, in the ſouthern part of the peninſula of Cantire. The trade is conſiderable, as it is the general reſort of the fiſhing veſſels; and the inhabitants are computed at about 5000. The harbour is excellent, in the form of a creſcent,

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opening to the eaſt, in front of the iſland of Arran. About fifty weavers are employed in the cotton manufacture [10].

Edifices.

Scotland abounds with remarkable edifices, ancient and modern. Thoſe of the capital have been already mentioned. In its vicinity is Hopeton-houſe, the ſplendid reſidence of the earl of Hopeton; Dalkeith palace, a ſeat of the Duke of Buccleugh; Newbottel, the ſeat of the Marquis of Lothian; Melville caſtle, the elegant villa of the Right Hon. Henry Dundas; and the ſplendid manſion of the Marquis of Abercorn. Nor muſt Pennicuik, the ſeat of the family of Clerk, be omitted; but the traveller of taſte would be more intereſted in Hawthornden, the ancient ſeat of Drummond the poet. It would be vain to attempt a ſimilar enumeration for the other counties, and only a few of the moſt remarkable ſhall be mentioned; ſuch as in the ſouth, the Duke of Roxburgh's, near Kelſo; Mount Teviot, a ſeat of the Marquis of Lothian; Minto tower, Lord Minto's; Lauder caſtle, Marchmont, near Polwarth, both in the Merſe; the Duke of Queenſberry's at Drumlanrig; Lord Douglas's villa at Bothwell; and Hamilton palace, near Hamilton. The county of Ayr contains many beautiful edifices belonging to the nobility and gentry, among which may be mentioned Loudon houſe, the ſeat of the Earls of Loudon; Dundonald, that of the Cochrans, Earls of Dundonald, and Colaine caſtle, the ſeat of the Earl of Caſſils, deſigned by Adams, in 1789. Wigtonſhire has Culhorn, the ſeat of the Earls of Stair, and Caſtle Kennedy; Galloway houſe, Merton, &c. In the vicinity of the flouriſhing city of Glaſgow, it may be imagined that the villas muſt be numerous and elegant; and, even the ſmall iſland of Bute can boaſt of Mount Stuart. The caſtle of Dumbarton is another remarkable edifice in this region.

On paſſing the Forth, the rich county of Fife preſents many intereſting edifices, ſuch as Leſlie caſtle, the ſeat of the Earls of Rothes; Wemyſs, Kelly, and Balcarras, the ſeat of the earls of thoſe titles; the houſe of Kinroſs, built by Sir William Bruce, &c. &c. Perthſhire contains Tullibardin and Blair, the ſeats of the Duke of Athol; Dupplin, that of the Earl of Kinnoul; Drummond, the reſidence of Lord Perth; Taymouth, the ſplendid manſion of the

[10] Statiſt. Account, x. 552.

Earl

Earl of Braidalban; Scone, a royal palace, &c. &c. In Angus we find Panmure, the ancient reſidence of the Earls of Panmure; Athie, that of the Earls of Northeſk; and Kinnaird, of the Earls of Southeſk; Glammis, the venerable ſeat of the Earls of Strathmore. The ſhire of Mearns, or Kincardine, contains Dunotter caſtle, the elevated manſion of the Earls Marſhall, &c. Aberdeenſhire preſents Caſtle Forbes, Philorth, and Haddo: in Bamfshire we find Cullen houſe, the intereſting ſeat of the Earl of Finlater; Duff houſe, that of the Earl of Fife; Gordon caſtle, a beautiful manſion of the Duke of Gordon; in the county of Moray, Tarnaway caſtle, the ſeat of the Earl of Moray; Inverneſs preſents Fort George, a military erection of ſome note, about twelve miles to the eaſt of Inverneſs. The line of forts is continued through the centre of the county, by fort Auguſtus, at the further end of Loch Neſs, and fort William, at the northern extremity of Loch Linny, at the bottom of the lofty Bennevis. In the county of Roſs, on the north of Dingwall, is Caſtle Leod, a ſeat of the Earls of Cromarty: New Tarbet, and Balnagowan, command the Firth of Cromarty. At Dornock and Dunrobin, are ſeats of the Earls of Sutherland. The ſhore of Caithneſs diſplays many ancient caſtles, but the modern edifices are few: the patriotic Sir John Sinclair has a pleaſing reſidence near Thurſo; and in the N. W. extremity of Scotland, Lord Reay has two manſions, one near Tong, and another at Durneſs, with an extenſive wild of rocks, interſperſed with moraſſes, called Lord Reay's foreſt. The weſtern coaſts of Scotland preſent an enormous void, till Inverary, the ſplendid manſion of the Dukes of Argyle, riſes like ſome oriental viſion in the wilderneſs. Edifices.

The moſt remarkable inland navigation in Scotland, is the excellent and extenſive canal from the Forth to the Clyde. Mr. Smeaton's firſt ſurvey was preſented in 1764; but four years elapſed before the act of parliament was paſſed for its execution, and the canal was begun in the ſame year with the act [11]. Inland Navigation.

"The dimenſions of this canal, though greatly contracted from the original deſign, are much ſuperior to any work of the ſame nature in South Britain [12]. The Engliſh canals are generally from three to five

[11] Phillips, 276. [12] Ibid. 316.

INLAND NAVIGATION.

feet deep, and from twenty to forty feet wide, and the lock gates from ten to twelve feet; but they anſwer the purpoſe of inland carriage from one town to another, for which alone they were deſigned. The depth of the canal between the Forth and Clyde, is ſeven feet; its breadth at the ſurface fifty-ſix feet; the locks are ſeventy-five feet long, and their gates twenty feet wide. It is raiſed from the Carron by twenty locks, in a tract of ten miles, to the amazing height of 155 feet above the medium full ſea-mark. At the twentieth lock begins the canal of partition on the ſummit, between the Eaſt and Weſt Seas; which canal of partition continues eighteen miles, on a level, terminating at Hamilton-hill, a mile N. W. of the Clyde, at Glaſgow. In ſome places the canal is carried through moſſy ground, and in others through ſolid rock. In the fourth mile of the canal there are ten locks, and a fine aqueduct bridge, which croſſes the great road leading from Edinburgh to Glaſgow. The expence of this mile amounted to 18000*l.* At Kirkintulloch, the canal is carried over the water of Logie, on an aqueduct bridge, the arch of which is ninety feet broad, and was built at three different operations, of thirty feet each, having only one centre of thirty feet broad, which was ſhifted on ſmall rollers, from one ſtretch to another. Though this was a new thing, and never attempted before with an arch of this ſize, yet the joinings are as fairly equal as any other part of the arch. The whole is thought to be a capital piece of maſonry. There are in the whole eighteen draw bridges, and fifteen aqueduct bridges, of conſiderable ſize, beſides ſmall ones and tunnels."

The ſupplying the canal with water, was of itſelf a very great work. One reſervoir is above twenty-four feet deep, and covers a ſurface of fifty acres, near Kilſyth. Another, about ſeven miles north of Glaſgow, conſiſts of ſeventy acres, and is banked up at the ſluice, twenty-two feet.

The diſtance between the firths of Clyde and Forth, by the neareſt paſſage, that of the Pentland Frith, is 600 miles, by this canal ſcarcely 100. On the 28th of July, 1790, the canal was completely open from ſea to ſea, when a hogſhead of the water of Forth was poured into the Clyde, as a ſymbol of their junction. The length of the canal is

preciſely thirty-five miles, and no work of the kind can be more ably finiſhed. INLAND NAVIGATION.

Another laudable plan was to conduct a canal from Fort William to Inverneſs, than which nothing could contribute more to improve the Highlands. The ſpace to be cut would not be conſiderable, but the times are unfavourable to ſuch a deſign. The canal of Crinan, which will ſave a troubleſome navigation around Cantire, is actually begun, and is hoped will ſpeedily be completed, when veſſels could paſs at once from the Clyde to the north of Jura. Could a canal be opened from the Firth of Dornoch, and Loch Shin, into the bay of Calval, in Aſſynt, perhaps every thing of this kind would be accompliſhed, that can be executed in the Highlands.

The general commerce of Scotland, though on a ſmaller ſcale, and with ſmaller capitals, is in moſt reſpects ſimilar to that of England, and ſhares in the national proſperity. That of the capital, through Leith, its port, has been eſtimated, as we have ſeen, at half a million yearly *. The chief exports are linen, grain, iron, glaſs, lead, woollen ſtuffs, ſoap, &c. &c. The imports are wines, brandy; and from the Weſt Indies and America, rum, ſugar, rice, indigo. Glaſgow exports cottons of all kinds, muſlins, lawns, gauzes, &c. glaſs, ſtockings, earthenware, cordage, &c. candles, ſoap, iron, leather, &c. &c. The chief imports are tobacco, ſugar, rum, and cotton from the Weſt Indies; Iriſh beef, butter, and linen; wines from Portugal, and other countries. The fiſheries of Scotland, if carried to a proper extent, would furniſh a very conſiderable ſtore of merchandize. Manufactures and Commerce.

The chief manufactures of Scotland are linen of various kinds, to the amount, it is ſaid, of about 750,000*l.* annually. Of woollens, the Scotiſh carpets ſeems to form the chief branch. The iron manufactures, particularly that at Carron, deſerve alſo to be enumerated among the chief national advantages.

As the neceſſary progreſs of manufactures and commerce, is from the ſouth to the north, owing, among other cauſes, to this, that the prices of food and labour are ſmaller in the north than in the ſouth, it

* In 1793, the Scotiſh exports were computed at 1,024,742*l.* Chalmers's Eſtimate, p. lxxv. edit. 1794. The ſhips employed were 2,234. Ib.

is

MANUFACTURES AND COMMERCE.

is to be expected, and indeed wiſhed, for the general benefit of the Britiſh empire, that the trade which has paſſed from Briſtol to Liverpool and Glaſgow, may gradually enliven and invigorate, even the Weſtern Highlands and Iſlands of Scotland. Some few of the gentlemen in the Highlands, ſeem to object to the propagation of induſtry, as tending to deprive them of their ancient reſpect, and the reminiſcence of feudal power; but this infatuation cannot continue, as it muſt ſoon be perceived, that to diffuſe a ſpirit of induſtry among their tenants, is the only infallible mode of increaſing their own revenues.

CHAPTER IV.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

CLIMATE AND SEASONS.

THE climate of Scotland is ſuch as might be expected in a latitude ſo remote, and a country ſo mountainous. In the eaſtern parts, there is not ſo much humidity as in England, as the mountains on the weſt arreſt the vapours from the Atlantic. On the other hand, the weſtern countries are deluged with rain, an additional obſtacle to the progreſs of agriculture; indeed, the chief obſtacle, for the example of the Swiſs evinces, that induſtry can overcome even mountains; but the climate of Swiſſerland is dry and pleaſant, and no toil can guard againſt the exceſs of falling moiſture. Even the winter is more diſtinguiſhable by the abundance of ſnow, than by the intenſity of the froſt; but in ſummer the heat of the ſun is reflected with great power in the narrow vales between the mountains, ſo as ſometimes to occaſion a phænomenon of glittering particles, that ſeem to ſwim before the eye. Theſe obſervations chiefly apply to the north and weſt. In the eaſt and ſouth the climate differs but little from that of Yorkſhire; and corn ſometimes ripens in the vales of Moray, as early as in Lothian.

Face of the Country.

The face of the country is in general mountainous, to the extent, perhaps, of two thirds; whence the population is of neceſſity ſlender, in compariſon with the admeaſurement. But the name of Highlands is more ſtrictly confined to Argyleſhire, the weſt of Perthſhire, and of Inverneſs; and the entire counties of Roſs, Sutherland, and Caithneſs. In proceeding from the ſouth eaſt, the entrance into the Highlands near Dunkeld, is very impreſſive, there being a conſiderable tract of plain, juſt before what may be termed the gates of the mountains. Even the eaſtern parts have little of uniform flatneſs, but are ſweetly diverſified with hill and dale. What in England is called a hill, would often in Scotland

Face of the Country.

Scotland be regarded as a mere ſlight riſe in the road. The rivers in general are remarkably pure and tranſparent, and their courſe rapid. The rich roughneſs of an Engliſh proſpect, diverſified with an abundance of wood, even in the hedge-rows, is in Scotland rarely viſible; whence the nudity of the country makes a ſtrong impreſſion on the ſtranger. But the laudable exertions of many of the nobility and gentry, who plant trees by millions, will ſoon remove this reproach. The maritime gales are noxious to ſuch plantations, but it has been recently diſcovered in France, that there is a common tree (the name is unfortunately forgotten) which will remain unhurt, even on the beach; and if a thick ſkreen be firſt formed of this tree, and ſuffered to attain ſome maturity, other denominations will proſper under its protection [1].

Soil and Agriculture.

For a minute account of the various ſoils that prevail in Scotland, and the different modes of agriculture, the reader muſt be referred to the Statiſtical Accounts, publiſhed by Sir John Sinclair. The excellence of the Engliſh agriculture, has juſtly entitled it to an imitation, almoſt univerſal. But this advantage is of recent date; and, for a long period of time, Scotland was remarkable for producing the beſt gardeners, and the worſt farmers in Europe. The ſuperior advantages of great, or of ſmall farms, have been recently diſcuſſed with much care, as the importance of the ſubject demands. It would ſeem, that for the firſt great improvement of a country, the farms ſhould be large, that the farmer may have a ſufficient capital to make experiments, and diſcover the moſt productive crops, or thoſe moſt ſuited to the nature of the ſoil. When laſting examples have thus been inſtituted, it is certainly more advantageous for the community, that the farm ſhould be reſtricted to a ſmall or moderate ſize.

Rivers.

Forth.

The three chief rivers of Scotland, are the Forth, the Clyde, and the Tay. The chief ſource of the Forth is from Ben Lomond, or rather from the two lakes, Con and Ard: the ſtream of Goudie ſoon joins it from the lake of Menteith; and the river Teith, fed by the lakes Ketterin, Lubnaig, and others, ſwells the Forth to a noble ſtream, about four miles above Stirling.

[1] Another uſeful plan is to ſow or plant the ſeeds and trees very thick, or to ſow them with heath, as in Mecklenburg. The ſycamore will bear the ſea-ſpray.

The

The Clyde is ſaid to iſſue from a hill in the S. E. corner of Tweeddale, called Arrik Stane, which is undoubtedly the chief ſource of the Tweed, and one ſource of the Annan: but the Clyde has a more remote ſource in Kirſhop, or Dair water, riſing about ſix miles further to the ſouth, in the very extremity of Lanarkſhire; and the true ſource of the Annan ſeems to be Loch Skeen, in the county of Selkirk. However this be, the Clyde paſſes through Crauford Moor, leaving the range of Leadhills on the left, and winding under the lofty hill of Tinto, near Symington, purſues a northerly courſe, till about two miles to the ſouth of Carnwath, when it aſſumes its chief weſterly direction. RIVERS.

The principal ſource of the Tay, is the lake of the ſame name, or the river may be traced to the more weſterly ſources of the Attrick and the Dochart, and the ſmaller ſtream of Lochy; which fall into the weſtern extremity of Loch Tay. Soon after this noble river iſſues from the lake, it is joined by the river Lyon; and, at no great interval, by the united ſtreams of the Tarf, the Garry, and the Tumel, the laſt a rapid and romantic river. The ſtreams of Ericht and Ilay, ſwell the Tay, about nine miles to the north of Perth; after paſſing which city, it receives the venerable ſtream of the Ern, and ſpreads into a wide eſtuary. Tay.

Next in conſequence and in fame, is the Tweed, a beautiful and paſtoral ſtream, which, receiving the Teviot from the ſouth, near Kelſo, falls into the ſea at Berwick. Tweed.

The Scotiſh Tyne is an inconſiderable river, which runs by Haddington.

In the ſouth weſt, the Annan contributes largely to the Frith of Solway, but no town worth mentioning adorns its banks. Dumfries ſtands upon the Nith, a river of longer courſe than the Annan, and marked at its eſtuary by the ruins of Carlaveroc caſtle, an important fortreſs in ancient times. The river Ore, and that recently ſtyled Kirkudbright, anciently and properly called the Ken, (whence is derived the title of Kenmure,) and the Fleet, are ſurpaſſed by the river Cree, or Crief; which formerly ſplit Galloway into two diviſions, and which opens into the noted bay of Wigton. Annan. Nith.

Rivers. The rivers of Ayrſhire, flowing into the grand eſtuary of the Clyde, are of inconſiderable ſize.

Eden. To the north of the eſtuary of Forth, occurs the Eden, which, after watering the royal park of Falkland, and Coupar, the county town, meets the Ocean, about two miles to the north of St. Andrews.

To the north of Tay are the South Eſk, which paſſes by Brechin and Montroſe; and the North Eſk, a leſs conſiderable ſtream, but both impart titles to Earls.

Dee. In the county of Kincardine there is no river of conſequence. But the Dee is a conſiderable and placid ſtream, iſſuing from the mountains of Scairſoch, and purſuing a due eaſterly courſe to Aberdeen. The Don runs almoſt parallel, a few miles to the north, joining the ſea about two miles from Aberdeen, after paſſing Old Aberdeen, or rather, in the old orthography, Aberdon.

A few miles to the north of the Don, the river Ythan falls into the German ocean, a ſtream formerly celebrated for its pearl fiſheries, of which ſome relics remain. The Uggie is the laſt ſtream of any conſequence in Aberdeenſhire.

The following rivers direct their courſe to the north. The Devon joins the ſea at Bamf. Spey. The Spey is a grand and impetuous river, riſing from a ſmall lake, called Loch Spey, in the vicinity of the high mountain of Corriarok, near Fort Auguſtus, whence it rolls to the ſouth-eaſt, amid mountainous wilds, till it ſuddenly turns to its fixed direction, the north-eaſt, being, perhaps, upon the whole, the moſt conſiderable Alpine river in Scotland.

The water of Loſſie is only remarkable, as it waſhes the venerable remains of Elgin; but Findorn, which runs by the Forres of Macbeth and Shakeſpeare, is a conſiderable torrent.

Neſs. The Neſs, iſſuing from the lake ſo called, and the Beuly, conſpire to form the large eſtuary, called Murray Firth; while that of Cromarty is formed by the Grady, the Conon, and other ſtreams.

The eſtuary of Dornoch is formed by a river which iſſues from Loch Shin, by the Caran, and by the intermediate ſtream, called Okel.

The other ſtreams in the the furtheſt north of Scotland, are unhappily of ſmall conſequence. The water of Thurſo, and that of Naver, are

are the chief. In the north-weſt extremity are the Strathmore, the Strathbeg, and the Durneſs, which enters the ſea to the eaſt of the ſtupendous promontory of Cape Wharf, now modernized Wrath. Rivers.

On the weſt of Scotland there is no river of any moment; but the defect is compenſated by numerous lakes, or rather creeks, of which the moſt conſiderable are Laxford, Calva, Ennard, and that of Broome, which forms a noble bay, ſtudded with iſlands, nearly parallel with the bay of Dornoch. On its ſhore is the projected ſettlement of Ullapool, to which every patriot muſt wiſh ſucceſs*. Next are the En and the Gare, the Torridon, the Keſſern, and others of ſmaller note. Argyleſhire exhibits the Sunart, a long inlet, which terminates at Strontian; and the Linny, extending to Fort William. The Etif is impeded by a ſingular cataract, at its entrance into the ſea. The ſmall inlet of Crinan attracts obſervation, by the promiſed canal; and the liſt is cloſed by Loch Fyne, and Loch Long, forming vaſt inlets from the eſtuary of Clyde. Weſtern Inlets.

Among the lakes of Scotland, the chief in extent and beauty is that of Lomond, ſtudded with romantic iſlands, and adorned with ſhores of the greateſt diverſity. The iſles are ſuppoſed to form part of the Grampian chain, which here terminates on the weſt. The depth of this lake in the ſouth, is not above twenty fathoms; but the northern creek, near the bottom of Ben Lomond, is from ſixty to eighty fathoms. At the time of the earthquake in Liſbon, 1755, the waters were agitated in a ſingular manner. Lakes. Lomond.

On the eaſt of Lomond is an aſſemblage of curious lakes, the Ketterin, or Cathein, the Con, or Chroin, the Ard, the Achray, or Achvary, the Vanachor, the Lubnaig; exhibiting ſingular and pictureſque ſcenes, called by the Highlanders the *Troſachs*, a word ſignifying rough, or uneven grounds[2]. This denomination is ſtrictly applicable to the ſurrounding hills, and rocks, of diſtorted forms, as if ſome convulſion had taken place; but often covered with heath, and ornamented, even to the ſummits, with the weeping birch. The hills are of argillaceous Ketterin, &c.

* Loch Broome extends about twelve miles into the country, and is ſurrounded with mountains of marble and lime-ſtone. Knox, ii. 465.

[2] Garnett's Tour, ii. 173.

Lakes. ſchiſtus; in other words, in ſtrata of coarſe ſlate, moſtly vertical, and interſperſed with veins of quartz. Ketterin, or Cathein, is a lake of conſiderable extent and beauty, with ſome rocky iſles, and crowned by the mountain of Ben Veney: the fiſh are trout and char. Vanachor has ſalmon and trout; but Achray only pike, tyrants without ſubjects. The Con, the Ard, and Lubnaig, have not been celebrated by touriſts.

Menteith. In the vicinity is the lake of Menteith, a beautiful ſmall lake, about five miles in circumference, with two woody iſles, one preſenting the ruins of a monaſtery, the other thoſe of a caſtle of the old Earls of Menteith.

Having thus briefly deſcribed the principal lake, and ſome others in its vicinity, it may be proper to obſerve, before proceeding to others in a more northerly ſituation, that the S. W. region of Scotland, anciently called Galloway, contains ſeveral picturesque lakes, (which, in Great Britain and Ireland, ſeem always to accompany groupes of mountains,) though not of equal extent and celebrity with thoſe of the north. The moſt conſiderable is the lake of Ken, in the county of Kirkudbright, on which ſtands a village, called New Galloway. This lake is decorated with three ſmall iſles. Next is that of Crey, on the borders of Wigtonſhire. In the county of Ayr there is a ſmall lake, called Loch Dolen.

Returning towards the north, Loch Leven, in Fifeſhire, attracts obſervation from its hiſtorical fame. The lakes in the ſouth of Perthſhire, have been already mentioned, and to the eaſt muſt be added Loch Ern, Loch Tay, and thoſe of Rannoch, Lydoch, and Ericht. That of Tay, in particular, is a grand and beautiful expanſe of water, of ſuch length, as rather to reſemble a noble river; and at its eaſtern extremity, are placed the capital manſion and plantations of the Earl of Braidalbin. Thoſe more to the north of this county, may preſent many yet unſeen and unknown beauties.

Loch Neſs. Loch Neſs rivals Loch Tay in extent and reputation. This lake was alſo affected at the time of the earthquake at Liſbon. The depth is from ſixty to 135 fathoms: the fiſh, excellent trout[3]. Its great depth is the cauſe why it never freezes. It is remarkable that the bed of this

[3] Pennant's Tour.

lake,

lake, and in general of the watery chain which extends to Loch Linney, is filled with farcilite, or pudding-ſtone, hills of which occur near Dunolla and Dunſtaffnage, on the weſtern ſhores of Argyle. The counties of Sutherland and Caithneſs, contain many ſmall lakes. The chief are Loch Loil, which ſends a ſtream into the bay of Far; and Loch Shin, a conſiderable lake, in a country little known or viſited. According to the deſcription of Mr. Cordiner [4], it is a charming piece of water, of great extent, winding among the hills, with woods, often ſtretching down to the ſhores. It is ſaid to be twenty miles in length, but the eye can only command a few miles at a time. From its ſouth-eaſt extremity iſſues the river Shin, in two broad caſcades, from the ſides of a ſmall iſland. Mr. Cordiner adds, that by a ſingular error in Dorret's map, the diſtance from Larg church, on the S. E. of Loch Shin, to Moaidale, ſouth of Loch Naver, meaſures only five miles, while by computation in travelling, there are at leaſt eighteen. But Dorret's map, though valuable for the time, is ſtained with numerous and groſs errors; and Loch Naver lies almoſt due north of Shin, inſtead of due eaſt. Lakes. Loch Loil.

Many of the lakes in the weſtern diviſion of Scotland, have been already mentioned under their proper deſcription, as creeks or bays, Among a few others which deſerve notice, may be named Loch Fainiſh, a conſiderable lake in Roſshire; the lakes Lochy and Laggen, in the county of Inverneſs. Loch Awe, in Argyleſhire, is the moſt conſiderable lake in the weſt of the Highlands; it is about thirty miles in length, and from one to two in breadth; and is ſtudded with many ſmall, woody iſles, one of which bears the ruins of a monaſtery, and another thoſe of an ancient fortreſs, the reſidence of the Campbells of Lochawe, afterwards Dukes of Argyle. This lake empties itſelf, by a conſiderable ſtream, near its northern end, into the creek, called Loch Etif.

But the chief diſtinctive feature of Scotland, conſiſts in its numerous mountains, which interſect the country in various directions. In the ſouth-weſt, the ancient province of Galloway preſents an extenſive aſſemblage of hills, which ſeldom deſcribe any uniform chain, from the Mountains.

[4] Letters to Mr. Pennant, London, 1780. Quarto, p. 117.

bay

Mountains. bay of Glenluce, which extends towards Loch Ryan, and thence, in a N. E. direction to Loch Doon, the ſource of the river Doon, which joins the ſea near Ayr. Other ridges run in various directions, generally north and ſouth, according to the courſe of the rivers, till we arrive at the Nith, near which is Cruffel, a detached ſummit, of conſiderable height. According to General Roy, than whom there cannot be a better authority, the mountains of Galloway form a connected chain with thoſe of Cheviot, on the N. E.

But the chief elevation of this part of Scotland, is that metalliferous ridge in its very centre, called the Lead Hills, &c. whence many rivers deſcend in all directions to the ſea. The ſmall ſtream of Elvan conveys particles of gold to the Clyde, and German miners are ſaid to have diſcovered conſiderable quantities of that precious metal. The chief ſummit of that ridge is Hartfell, which, according to ſome accounts, is 3300 feet above the level of the ſea; but by others 2582. Cruffel is only 2044. Not far to the north is Tinto, a remarkable ſolitary mountain; and Queenſberry-hill is about the ſame elevation. Loudon-hill, in Ayrſhire, is little memorable; but on returning to the eaſt, we find the uniform ridge of Lamermoor, terminating in St. Abb's-head. The hills of Pentland, on the ſouth of Edinburgh, are rather pictureſque than important. Berwick Law, and the romantic ſummits in the vicinity of Edinburgh, cloſe the liſt of the ſouthern hills. The Lead hills chiefly conſiſt of argillaceous ſchiſtus; but the grey granite abounds in the mountains of Galloway. In all, however, the chief portion ſeems to be calcareous; the ſummits are round, ſome verdant, others covered with heath. The red granite, and other grand Alpine rocks ſeem here unknown. In the Lothians, the calcareous ſtrata ſupport vaſt maſſes of whin, trap, and baſalt, which extend to the northern ſhore of the firth of Forth. On the eaſt and weſt of Inverkeithing, are whin and columnar baſalt[5]; the latter alſo occurring at Dichmont-hill, near Rutherglen, in Lanarkſhire, and at Dumbarton.

Ochill. On paſſing the Forth, appears the range of Ochill-hills, more remarkable for their ſingular agates and calcedonies, than for their height;

[5] Mr. Aikin's Notes.

and to finiſh the account of the Lowland hills, muſt be added thoſe of Kinnoul and Dunſinnan, in the eaſt of Perthſhire, and a ſmall range in Angus. In the county of Kincardin, the great chain of the Grampians terminates. On the north-eaſt of Aberdeenſhire, is Mormond, a remarkable ſolitary ſummit; from whence no mountains of note occur till Inverneſs, on the weſt, opens the path to the Highlands. Yet, it muſt not be forgotten, that from the lofty promontory of Trouphead, to Portſoy, extend vaſt maſſes of beautiful red granite, interſperſed with ſchorl; and of ſerpentine with ſteatites, and other valuable ſtones. The cape called Kinnaird-head, near Frazerburgh, preſents curious micaceous ſchiſtus; but the eaſtern ſhore offers nothing worthy of remark. Before leaving the Lowland hills, it may be obſerved that the ſmall ridge in Fifeſhire, between the Eden and Leven, called Loman-hills, conſiſts moſtly of hard free-ſtone, with ſuperincumbent ſtrata of whin and baſalt: while that ſeparating the plain of Kinroſs from Strathern, is on the ſouth ſide whin, and on the north toad ſtone, with calcareous ſpar, and ſteatites. Soon after occur the Alpine rocks of ſiliceous and micaceous ſchiſtus[6]. In general, the obſervation of Sauſſure is applicable, that mountains gradually riſe from the calcareous to the micaceous, and thence to the granite. Mountains.

The Grampian hills may be conſidered as a grand frontier chain, extending from Loch Lomond to Stonehaven, and forming the ſouthern boundary of the Highlands, though four or five counties on the north-eaſt of that chain, have, in their eaſtern and northern parts, the name and advantage of Lowlands. The tranſition to the Grampians is gradual, the firſt chain, according to General Roy, conſiſting of the Sadley-hills on the eaſt, the Ochils in the middle, and Campſy-hills on the weſt. To the Grampian chain belongs Ben Lomond (3262); Ben Ledy (3009); Ben More (3903); Ben Lawres, the chief ſummit (4015); Shihallion (3564); Ben Verlich (3300); and other leſs important elevations on the eaſt. Mount Battock in Kincardinſhire, is 3465 feet. Ben Cruachan, in Argyleſhire, is a ſolitary mountain, of 3300 feet above the ſea. Grampian Hills.

[6] Aikin's Notes.

Ben

Mountains. Ben Nevis.

Ben Nevis is the higheſt mountain in Great Britain, being eſtimated at 4350 feet above the level of the ſea, not much above a quarter of the height of Mont Blanc. This mountain has not hitherto been explored by any mineralogiſt. On the N. E. ſide it preſents a precipice, nearly perpendicular, and of prodigious height, by ſome accounts 1500 feet. The view from the ſummit is grand [7], exhibiting moſt of the weſtern Highlands, from the paps of Jura, to the hills of Cullen in Skey; on the eaſt it extends to Ben Lawres, in Perthſhire, and the river Neſs; extent of view about eighty miles. The ſuperior half of the mountain is almoſt deſtitute of vegetation. The ſummit is flat, with a gentle acclivity, and forms an eaſy pavement, probably of granite. Snow remains in the crevices throughout the year; but here are no glaciers, nor other magnificent alpine features *.

It would be difficult to divide the remaining mountains of the Highlands into diſtinct lines or groupes: they ſhall, therefore, be briefly mentioned in the order of proximity. To the N. W. of Ben Nevis is

Corriarok.

the long mountain of Corriarok, near Fort Auguſtus, over which a military road has been directed, in a zig-zag direction. From the foot of this mountain ariſes the rapid river Spey; and other ſtreams run to the weſt, circumſtances which indicate great elevation. About thirty

Cairngorm.

miles to the eaſt, riſes the mountain Cairngorm (4060 feet), or the blue mountain, clothed with almoſt perpetual ſnow, and remarkable for quartz of different colours, chiefly the ſmoaky kind, well known to lapidaries. The other chief mountains in this region, are thoſe of Braemar, or Scairſoch, at the ſource of the Dee; Ben Awn, and many of ſmaller height, ſuch as Benibourd †, Benachie, &c.

In the ſecond diviſion of the Highlands, which lies beyond Loch Linny and Loch Neſs, the mountains are yet more numerous, but not ſo memorable. The weſtern ſhore, in particular, is crowded with hills, from the iſland of Skey to cape Wrath, while a branch, ſpreading

[7] Statiſt. Acc. viii. 414.

* Drumalban, the *Dorſum Britanniæ* of the old writers, ſeems to be Ben Nevis, with the high deſert Moor of Ranael, extending twenty miles to the eaſt of that mountain.

† Always covered with ſnow, and perhaps, as Mr Aikin conceives, higher than Cairngorm. About the height of 4000 feet, ſnow remains all the year in Scotland.

eaſtward,

eaſtward towards Ord-head (1250 feet) forms, what are termed by ſeamen, the Paps of Caithneſs (1929 feet). The chief mountains on the weſt of Roſsſhire, are Ben Chat, Ben Chaſker, Ben Golich, on the ſouth of Loch Broom; Ben Nore, on the north of that commodious haven; and the hills of Cuinak, on the ſouth of Calva bay, or in the native language Kylis-Cuin. More inland, are Ben Foſkaig; and the chief mountain in this diſtrict, Ben Wevis (3720 feet). Mountains.

On proceeding to the moſt northern parts of Scotland, the counties of Sutherland and Caithneſs, firſt occurs Ben Ormoid; then Ben Cliberg, on the weſt of Loch Naver; and Ben Grim, to the north of which extends the chain, called the Paps, conſiſting of the mountains Morben, Scuraben, &c. from which run in a northerly direction, according to the courſe of the rivers, inferior chains, as that of Ben Maddy, on the eaſt of the river Naver, &c. The N. W. extremity of Scotland preſents ſome pleaſant vales toward the ſea, and inland that of Dornadilla, and an elevated plain on the weſt of Loch Loial, called Dirrymore foreſt[8]: that diſtrict called Rae's Foreſt, conſiſts of a bed of rock, interſperſed with patches of moraſs. The chief mountains are Ben Hop, and Ben Lugal: further to the weſt no names occur, except that of Cape Wrath, and the region is deſcribed by an intelligent traveller in the following terms[9]:

"But a wide extent of deſart country lay before us, and exhibited a moſt auguſt picture of forlorn nature. The proſpect was altogether immenſe, but wild and deſolate beyond conception. The mountains preſented nothing to view but heath and rock; between them formleſs lakes and pools, dark with the ſhades thrown from prodigious precipices, gave grandeur to the wilderneſs in its moſt gloomy forms." Curioſity has been appalled, and no traveller has penetrated into the wilds of Aſhir, for ſuch is the name of this diſtrict, which is by our ſeamen corrupted into Old Shores; but from the vaſt caverns in the vicinity of Cape Wrath, it is probable that the environs are chiefly calcareous[10]. Cape Wrath.

[8] Cordiner's Letter to Pennant, p. 111. [9] Ibid. 104.

[10] Statiſt. Account, vi. 279. (Pariſh of Edrachills,) The account of the intereſting pariſh of Durneſs, in which Cape Wrath ſtands, vol. iii. 576, is very lame and defective; if we truſt the Author, p. 579, the whole pariſh is lime-ſtone, and Cape Wrath affords excellent paſturage for ſheep.

Mountains. Having thus explained at ſome length, the directions and poſitions of Scotiſh mountains, becauſe they conſtitute the moſt remarkable feature of the country, and yet have never received due illuſtration, their conſtituent parts remain to be briefly examined [11]. On entering the Highlands, near Dunkeld, the firſt ridges are alluvial hills of gravel, containing pebbles of micaceous ſchiſtus, quartz, and granite, ſometimes ſurmounted by ſlate, and argillaceous ſchiſtus. The rocks immediately to the north of Dunkeld, are compoſed of micaceous ſchiſtus, penetrated in every direction by veins of quartz. From the junction of the Tay and Tumel, weſtward to Loch Tay, the northern bound of the vale is of the ſame ſubſtances, ſometimes interſperſed with garnets. The whole ſummit of the higher chain is covered with large rounded maſſes of granite. The ſouthern ſhores of Loch Tay, conſiſt of micaceous ſchiſtus, with a few garnets, interrupted about the middle with banks of compact bluiſh grey lime-ſtone. The northern ſhores ſimilar, but the lime-ſtone is micaceous. The mountains in Glenlochy are moſtly of micaceous ſchiſtus, interſperſed with garnet: Glen Lyon preſents ſmall veins of lead. The vale of Tumel, between Loch Tumel and Loch Rannoch, is overſpread with rounded fragments of granite and micaceous ſchiſtus, but contains granitoid, and ſome granite. The lower part of Glen Tilt chiefly exhibits micaceous ſchiſtus; the upper principally granite and lime-ſtone.

Such are the more ſouthern parts of the Highlands. In the weſt, towards Ben Lomond, micaceous ſchiſtus alſo abounds; but that mountain is chiefly of gneiſs, and the like features are found in the peninſula of Cantire. In the north of Argyleſhire *, appears the beautiful red granite, which chiefly conſtitutes the central chain, already indicated; to the north of which firſt appears micaceous ſchiſtus, and afterwards a remarkable courſe of pudding-ſtone, extending from Loch Neſs to Oban †. The mountains in the north have been little explored, but

[11] Mr. Aikin's Notes.

* Cruachan, according to Mr. Jameſon, conſiſts, at the bottom, of ſlate and micaceous ſchiſtus which is followed by granite to the top. Near Strontian are red granite and gneiſs. Glen Co preſents curious porphyries.

† According to Williams, II. 159. a like range extends through Perthſhire, into Monteith and Dumbartonſhire, croſſing the Clyde, near Dumbarton, and reaching the weſt ſide of Ayrſhire,

but Mr. Jameſon tells us, that the coaſt is chiefly a coarſe argillaceous ſand-ſtone, often appearing in the form of flags, while in ſome places are maſſes of breccia, being pebbles of red granite, micaceous ſchiſtus and quartz, in arenaceous baſes. Mount Scuraben is at the bottom ſand-ſtone, and ſand-ſtone flag, then the breccia, ſucceeded by a rock of white quartz to the ſummit, and probably forming the root and centre of the whole. Morben, and other mountains in this diſtrict, from their white colour, ſeem to be of the ſame compoſition. About the Ord of Caithneſs appear granite and micaceous ſchiſtus, and that mountain conſiſts of mingled quartz and felſpar. Near Dornoch, the rivers roll pebbles of micaceous ſchiſtus and granite, evincing the materials of the mountains, but their lower ſtrata conſiſt of argillaceous ſand-ſtone, till near Tain, where are granite, micaceous ſchiſtus, and hornblende. The ſand-ſtone and breccia reappear at Cromarty, and at Murray Firth, but at Fort George the primitive rocks begin. About two or three miles S. of Aberdeen, the red-coloured argillaceous ſand-ſtone and breccia again occur; and the caſtle of Dunotter ſtands on a rock of the latter ſubſtance. Mountains.

The central and weſtern parts of Sutherland and Roſsſhire, have not been explored; but it would ſeem that the weſt of Sutherland is chiefly primitive lime-ſtone, which is well known to form a great part of Aſſynt, and ſometimes contains maſſes of white marble. The mountains ſeem to be of granite and micaceous ſchiſtus, but often preſent the ſingular feature of vaſt ſummits formed of white quartz. According to Williams, this quartz is ſtratified, and tinged with blue, or bluiſh grey; and bears no vegetation, ſo that at a diſtance it reſembles ſnow. Near Loch Broom is found that ſort of granite which is beſt adapted for mill-ſtones.

Upon the whole it would appear, that the chief, or granitic chain of the Scotiſh mountains, extends in a S. W. and N. E. direction, from Ben Nevis to Portſoy. In many parts it has ſunk or ſubſided, as not unuſual, but the line is marked by the gradual tranſitions from lime-ſtone and ſand-ſtone, to micaceous ſchiſtus, and thence to granite.

ſhire, where it enters the Firth of Clyde; it hence ſeems to follow, in the ſame direction, the grand granitic chain of Scotiſh mountains.

Mountains. Ben Nevis, Cairngorm, and other lofty ſummits, mark this primitive chain. The Grampians, which form the outer ſkirt of this chain, conſiſt, according to a German mineralogiſt [12], of micaceous limeſtone, gneiſs, porphyry, ſlate, and granite, alternating with each other; and another German ſays, that the fundamental rock of the country conſiſts of granitic aggregates. The mountains in the S. W. are chiefly ſchiſtoſe, and the granite is grey, and of an inferior kind; but Mr. Williams informs us, that Ben Nevis, and other mountains in that quarter, are compoſed of elegant red granite, in which the pale roſe, the bluſh, and the yellowiſh colours, are finely mixed and ſhaded [13]. The like granite is found at Portſoy and Trouphead, and is probably continued through the whole chain, the ſuperior height of the region being marked by the extreme rapidity of the river Spey. This tendency of the leading chain, is not only marked out by the Grampians, but by that of the iſlands, and of the grand chain in Norway, which, indeed, ſeems a continuation of the Scotiſh chain, and the laſt, probably contains ſilver as well as the Scandinavian. The mountains on the N. W. of the lakes Neſs and Linny, are probably only exterior ſkirts of the ſame chain, and preſent the uſual declenſion of micaceous ſchiſtus, terminating in limeſtone, and ſandſtone, in the northern parts of Sutherland and Caithneſs. The iſlands of Shetland chiefly preſent micaceous ſchiſtus, interſperſed with a few maſſes of granite; and the Orkneys, &c. conſiſt moſtly of ſand-ſtone. The weſtern iſlands may be ſuppoſed to be chiefly calcareous. It is remarkable that the ſpace from Inverneſs to Dunolla, on the weſt, abounds with farcilite (pudding-ſtone) compoſed of pebbles of quartz, probably waſhed down from the granitic chain, and afterwards cemented by ſome unknown proceſs of nature, either by iron or ſiliceous earth.

General Roy mentions two remarkable features of the Highlands, firſt the moor of Rannoch, a high deſert of twenty miles ſquare, on the S. E. of Ben Nevis, a flat uninhabited moraſs. The ſecond is part of the N. W. coaſt, extending from Loch Inchard, twenty-four miles to the ſouth, breadth about ten miles, which preſents a moſt ſingular appearance, as if mountains had been broken into fragments, interſperſed with

[12] Kirwan's Geol. Eſſays, 481. [13] Mineral King. II. 13.

pools

pools of water. The northern extremities of Caithneſs, are low and moraſſy, and ſeem calcareous, as well as thoſe of Sutherland. Forests.

The foreſts of Scotland are very rare in the proper acceptation of the term; and the Sylva Caledonia has long ſince vaniſhed. The whole county of Selkirk was formerly denominated Ettric foreſt. There was alſo a conſiderable foreſt, that of Mar, in the weſt of Aberdeenſhire, where now remains the foreſt of Abernethy [14], extending to Cairngorm. In the county of Sutherland was the foreſt of Sletadale, on the north of Dunrobin, the ſeat of the earls of Sutherland; and in the north of the ſame county, are marked Parff-foreſt, between Aſhir and Dunan (probably originally Wharf foreſt, by the ſame name as the cape); to the ſouth of which were Reay foreſt, or that of Dirrymone; with thoſe of Dirrymore, and Dirrymena, on the north and ſouth of Loch Shin. No other foreſt occurs till we reach the county of Argyle, which contains Boachiltive foreſt on the north. Mention is made by late travellers of a royal foreſt near Loch Ketterin, called Finglas; but for this there ſeems no authority. The foreſt of Athol, in the ſame county, does not appear liable to the ſame objection.

Having given a general account of the indigenous plants of England, it will ſuffice, for the botany of Scotland, to point out the particulars in which the two floras differ, together with the cauſes of the difference. Botany.

The northern part of Britain differs from the ſouthern as to climate, in being colder and more rainy; and as to ſoil, in conſiſting chiefly of mountainous, granitic, or micaceous diſtricts, the higheſt peaks of which are buried in perpetual ſnow. There are no chalk-hills in Scotland; nor any of that ſoil which characteriſes the ſouth-eaſtern part of the iſland, and is compoſed, for the moſt part, of ſand and calcareous marl. We might, therefore, *a priori*, expect to meet with more alpine plants in Scotland, than of thoſe which flouriſh beſt in a light, chalky ſoil, and in a mild climate; this is found to be in fact the caſe. The greater number of vegetable ſpecies is the ſame in both countries; but the warm, moiſt region of Cornwall, Devonſhire, and Dorſet; the range of chalk-hills, on each ſide of the valley of the Thames; the dry, ſandy

[14] Prov. of Moray, Aber. 1798. 8vo. p. 267.

tracts

Botany. tracts of Norfolk, Suffolk, and Cambridge, and the fens of Lincolnſhire, contain many plants that are unknown to Scotland; as, on the other hand, the ſnowy ſummits of the Grampians, the extenſive foreſts of Badenoch and Braemar, and the bleak, ſhelterleſs rocks of the Hebudes, poſſeſs many hardy vegetables, which are not to be found in England. South Britain contains a greater number of ſpecies peculiar to itſelf; but thoſe that are ſimilarly circumſtanced in the northern part of the iſland, are of more frequent occurrence, and therefore more characteriſtic: to the Engliſh botaniſt, Scotland will have more the air of a foreign country, than England will to a Scotiſh naturaliſt. Amidſt the grand romantic ſcenery of the Highlands, the ſearch of the Engliſh botaniſt is continually ſolicited and repaid, by the appearance of plants, either altogether new to him, or which he has been accuſtomed to conſider as the rare reward of minute inveſtigation. In traverſing the vaſt natural foreſts of birch and pine, although his notice will be firſt attracted by the trees themſelves, in every ſtage of growth, from the limber ſapling, to the bare and weather beaten trunks, that have endured the ſtorms of five or ſix hundred winters, yet the new forms of the humbler vegetables will ſoon divide his attention; the red and white bloſſoms of the trailing *Linnæa*, the *Pyrola ſecunda*, and *uniflora*, *Satyrium repens*, *Ophrys corallorhiza*, and *Convallaria verticillata*, will each attract their ſhare of regard. If he be winding along the rocky margin of Loch Tay, or Loch Neſs, the *Eriocaulon decangulare*, the alpine *Circæa*, the minute *Subularia aquatica*, will reward his labour; the moiſt and ſhady receſſes of the ſlate mountains, are carpeted by the three *Veronicas*, the *Alpina*, the *ſaxatilis*, and *fruticuloſa*; by the *Saxifraga umbroſa*, the *Thalictrum alpinum*, and *Erigeron Alpinum*. In the thin peat moors that overſpread the rocks, are found the *Schoenus rufus*, *Scirpus multicaulis*, *Juncus trifidus*, *biglumis*, and *ſpicatus*, all of them belonging to the natural claſs of ruſhes; with the Alpine cotton-graſs, the *Toſieldia paluſtris*, a few *carexes*, and ſome of the dwarf ſpecies of *willow*. The mountainous diſtricts of granite are peculiarly rich in alpine plants; the ledges and crevices of the rocks are adorned by tufts of the golden cinquefoil (*Potentilla aurea*); and luxuriant feſtoons of the *Arbutus alpina*, and *Arbutus uva urſi*, glowing with their ſcarlet and deep

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blue berries, among their gloſſy leaves; the leſs precipitous parts, and the borders of the torrents, are overſpread with alpine graſſes, with the viviparous *Polygonum*, the *Azalea* and *Sibbaldia procumbens*, the yellow *ſaxifrage*, (*Saxifr. aizoides cernua* and *rivularis*,) the *Dryas octopetala*, (mountain avens,) *Rhodiola roſea*, *Rubus arcticus*, and the alpine *Alchemilla*, *Epilobium*, and *Serratula*. The cloudberry (*Rubus chamæmorus*), and ſome of the *lichens* flouriſh amidſt the ſnow and ſolitude of the moſt elevated ſummits; and afford at the ſame time ſhelter and food for the Ptarmigan, almoſt the only one of our native birds that can inhabit ſo cold a ſituation. The Lowlands of Scotland ſeem to contain no plants which are not found in ſimilar ſoils in England; the ſea-coaſt, however, exhibits two umbelliferous vegetables, the *Liguſticum Scoticum*, and *Imperatoria Oſtruthium*, which cannot be met with on the ſouthern ſhore.

Of the plants that are peculiar to South Britain, the number of ſpecies, and, indeed, of entire genera, are ſo conſiderable, that to enumerate the whole would be an endleſs taſk; the following are ſome of the principal.

The proper bulbous rooted, are almoſt entire ſtrangers to Scotland; of the genera *Crocus*, *Galanthus*, *Leucojum*, *Narciſſus*, *Fritillaria*, and *Tulipa*, this country does not poſſeſs a ſingle ſpecies. Several kinds of the *Orchidæa*, which grow on chalk and lime-ſtone, as well as the whole genera of *Seſleria* (blue moor graſs); *Polemonium* (Jacob's ladder); *Rubia* (Madder); *Impatiens Clematis* (Virgin's bower); *Hedyſarum* (Saintfoin); *Athamanta* (ſtone parſley); *Poterium* (burnet); and *Buxus* (box-tree), are equally unknown. The tracts of ſand in England, abound with plants that do not occur in Scotland; ſuch are the genera *Exacum*, *Tillæa*, *Herniaria*, *Delphinium* (larkſpur), and *Vella*. The ſea-coaſt and ſalt-marſhes of Scotland, are deficient in many genera that are by no means uncommon in the ſouthern part of the iſland; of which the principal are *Rotbollia* (ſea hard graſs); *Polycarpno*, *Tamarix* (Tamariſk); *Corrigiola*, *Frankenia*, *Piſum* (Pea), and *Santolina* (ſea cotton). Laſtly, a few of the more ſucculent aquatics, as the *Acorus*, *Stratioles*, and *Sagittaria*, are rarely, if ever, obſerved north of the Tweed.

The

Zoology. The Zoology of Scotland preſents little remarkable, as diſtinct from that of England. The ſmall horſes of Galloway ſeem to have been a primitive breed, and, in diminutive ſize, are exceeded by thoſe of Shetland. The cattle in Galloway are often without horns, a defect which is ſuppoſed to be recompenſed by the ſuperior quantity and quality of the milk. The kylies, as already mentioned, are a middle-ſized breed from the province of Kyle, and other diſtricts of Ayrſhire and Galloway. On the eaſt are found large cattle, of various breeds. The ſheep are ſmaller and ſhorter than thoſe of England, but are now croſſed in various directions; thoſe of Shetland are remarkable for the fineneſs of the wool, which is, however, interſperſed with coarſer piles. Goats are not ſo numerous in the Highlands and Iſles, as might be expected: this animal not only enlivens the Alpine landſcape, but yields uſeful leather and milk, and might occaſionally ſupply the want of other proviſion. Of dogs, no breed is remembered peculiar to Scotland; but the ſhepherd-dogs in the province of Galloway, are endowed with remarkable ſagacity, ſo as to underſtand and execute even complicated commands.

Of wild animals, the wolf has been extirpated in Scotland, only ſince the year 1680. The wild cat is ſtill occaſionally found; the other claſſes correſpond with thoſe of England, except that the Roe is ſtill not unfrequent. Among the birds, eagles are not unknown, nor elegant falcons. The ſhores and iſlands preſent numerous kinds of ſea-fowl. In the progreſs of cultivation, ſome new birds have appeared from England; for inſtance, the golden-creſted wren, which even viſits Shetland, after a flight of ſixty miles, which is ſurpriſing for ſo diminutive a bird [15]: but the nightingale, who would be a moſt welcome gueſt, ſtill refuſes the journey.

Scotland abounds with fiſh of all kinds, and contributes great ſupplies to the Engliſh market, particularly in lobſters and ſalmon. By ſome ſingular chance, the holibut, a coarſe dry fiſh, is in Scotland ſtyled the Turbot, which in Scotland is called *Rodden-fleuk*, the laſt word being a general denomination for flounders and other flat fiſh. The tranſparent lakes, rivers, and rivulets of Scotland, preſent a beautiful variety

[15] Pennant's A. Z. vol. i. 39.

of

of fiſh: on the northern and weſtern coaſts are numerous ſeals; and it appears from the life of St. Columba, that the ancients had a mode of rendering them tame, and obedient to the call. The whale ſometimes appears, and the baſking ſhark frequently plays in the weſtern inlets. Pearls are found in the rivers Teith and Ythan, in a large kind of mya, or muſcle. Some large ones are in the ſhape of a pear, others are pink on one ſide. Many beautiful zoophites, on the northern ſhores, have been found and introduced to public notice, by Mr. Cordiner. Zoology.

In conſidering the mineralogy of Scotland, it may be premiſed, that a country ſo mountainous muſt be naturally expected to abound with metals, and ſome fortunate accident may, perhaps, diſcover in ſome of the ſkirts of the granitic chain, ſilver mines, equal to thoſe of Norway; for ſuch diſcoveries ariſe not from a ſedulous or ſkilful enquiry, but from the trifling accidents of a ſhower of rain, of a ſhepherd running after a goat, or the like. Mr. Kirwan has given an excellent account of the various ſubſtances in which metals are generally found[16]. In granitic mountains, tin, lead, iron, zinc, biſmuth, cobalt; and in gneiſs, or ſchiſtoſe granite, ſilver, copper, lead, tin, and zinc. In micaceous ſchiſtus are found copper, tin, lead, antimony; in hornblende ſlate, copper ore; under argillite, or common ſlate, ſilver, copper, lead, zinc. In ſteatite, ſulphureous pyrites, and magnet. In primitive lime-ſtone, appear copper, lead, zinc; and even in ſtrata of coal, have been found native ſilver, galena, and manganeſe. The ſmall quantity of gold found in Scotland, has been procured from the Lead-hills, which are moſtly compoſed of coarſe ſlate. This precious metal firſt appeared, as already mentioned, in the ſands of Elvan, a rivulet which joins the Clyde, near its ſource; and a place ſtill exiſts, called Gold-ſcour, where the Germans uſed to waſh the ſand. None worth mentioning has been found recently. The ſilver generally accompanies lead; and in the rich mines of Saxony, the baſer metals were found near the ſurface, but the richer at a great depth. The ſilver found in Scotland, has hitherto been of little account; the chief mine was that at Alva, which has ſince only afforded cobalt. Nor can Scotland boaſt of copper, though a ſmall quantity was found in the Ochills, near Alva, with ſilver Mineralogy.

[16] Geol. Eſſ. 428.

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and cobalt; and it is ſaid that the iſlands of Shetland offer ſome indications of that metal. Copper has alſo been found at Colvend in Galloway, at Curry in Lothian, at Oldwick in Caithneſs, and Kiſſern in Roſsſhire.

The chief minerals of Scotland are lead, iron, and coal. The lead mines in the ſouth of Lanarkſhire, where the gold was alſo found, have been long known. Thoſe of Wanlock-head, are in the immediate neighbourhood, but in the county of Dumfries, and belong to another proprietor. Some ſlight veins of lead have alſo been found in the weſtern Highlands, particularly Arran. Iron is found in various parts of Scotland; the Carron ore is the moſt known, which Mr. Kirwan deſcribes as being an argillaceous iron-ſtone, of a blueiſh grey, internally of a dark ochre yellow [17]. It is found in flaty maſſes, and in nodules, in an adjacent coal mine, of which it ſometimes forms the roof. At the Carron-works, this ore is often ſmelted with the red greaſy iron ore from Ulverſton, in Lancaſhire, which imparts eaſier fuſion, and ſuperior value. Calamine, or zinc, is alſo found at Wanlock-head; and it is ſaid, that plumbago and antimony may be traced in Scotland.

But the chief mineral is coal, which has been worked for a ſucceſſion of ages. Pope Pius II, in his deſcription of Europe, written about 1450, mentions that he beheld with wonder, black ſtones given as alms to the poor of Scotland. But this mineral may be traced to the twelfth century. The earlieſt account given of the Scotiſh coal mines is contained in a book, publiſhed by one George Sinclair, who calls himſelf Profeſſor of Philoſophy at Glaſgow, but I cannot trace him in the univerſity liſt [18]. He explains, with ſome exactneſs, the manner of working coal; and mentions the ſubterraneous walls of whin which interſect the ſtrata, particularly a remarkable one, viſible from the river Tyne, where it forms a cataract, and paſſing by Preſton-pans, to the ſhore of Fife. Mr. Williams has recently given his obſervations on this ſubject, with much practical ſkill. The Lothians, and Fifeſhire, particularly abound with this uſeful mineral, which alſo extends into

[17] Min. vol. ii. 174.

[18] Nat. Phil. Improven by new Exp. Edinb. 1683. Quarto, p. 258—302.

Ayrſhire;

Ayrſhire; and near Irwin is found a curious variety, called ribbon coal. A ſingular coal, in veins of mineral, has been found at Caſtle Leod, in the eaſt of Roſsſhire. MINERALOGY.

In paſſing to the leſs important minerals of Scotland, the new earth found at Strontian, in the diſtrict of Sunart, and parish of Ardnamurchan, Argyleſhire, is now conſecrated in numerous ſyſtems of mineralogy and chymiſtry. Ben Nevis affords beautiful granite. Fine ſtatuary marble is found in Aſſynt, and at Blair Gowrie, in Perthſhire. A black marble, fretted with white like lace-work, occurs near Fort William; dark brown with white at Cambuſlang, Clydeſdale. Jaſper is found in various parts; Arthur's ſeat offers a curious variety; and on the weſtern ſhore of Icolmkill, are many curious pebbles, of various deſcriptions [19]. Fuller's earth is found near Campbeltown, in Cantire; and, it is ſuppoſed, that there muſt be a vaſt maſs of talc, equal to that of Muſcovy, in the mountains which give riſe to the river Findorn, as large pebbles of it are ſometimes found in that ſtream. The pearls have been already mentioned: but that any of the gems are found in Scotland, ſeems dubious. Quartz and fluor aſſume various hues; and what are called falſe ſapphires, rubies, emeralds, &c. fall under one or other of theſe deſcriptions, while the real gems belong to the argillaceous claſs, and when examined with a microſcope, are found to conſiſt of minute layers, a form common to the argillaceous deſcription.

The mineral waters of Scotland are numerous, but none of equal fame with thoſe of England. The chief are Moffat wells in the ſouth, and thoſe of Peterhead in the north. Mineral Waters.

Scotland, like other mountainous countries, abounds with ſingular ſcenes, and natural curioſities. The caves on the ſhore near Colvend, in Dumfrieſſhire, are worth notice; and the beautiful falls of the Clyde, near Lanark, have deſervedly excited much attention. In proceeding up the river from Lanark, firſt occurs a ſmall cataract, called Dundaff Linn, then that of Corra, the moſt pictureſque; and little more than half a mile further, that of Bonnington appears, a ſingle caſcade, of about twenty ſeven feet. To the weſt of Lanark is found the cataract Natural Curioſities.

[19] Garnett's Tour.

Natural Curioſities.

of Stone Byres, beyond which ſalmon cannot paſs up the ſtream. On the eaſt of this part of Scotland, are the paſtoral vales of the Tweed and Teviot, celebrated in ſong; the deep paſs of the Peaths; and the romantic rock of Baſs, the haunt of the ſolan gooſe; and a well near Edinburgh abounds with petrol. The baſaltic columns of Arthur's ſeat, deſerve inſpection. On the northern ſhore of the Forth, near Dyſart, a coal mine has for ages been on fire, probably from decompoſed pyrites, and has ſupplied Buchanan with a curious deſcription. The beauties of Loch Lomond have been ſo often deſcribed, that it is unneceſſary to repeat ſo trivial a theme; but the *Troſacs*, or ſingular hills around Lake Ketterin, &c. form a new acquiſition to the traveller. The hill of Kinnoul near Perth, is a great curioſity, preſenting a maſs of uncommon minerals. The numerous lakes and mountains need not be again mentioned. The rocks off the coaſt of Aberdeenſhire, often aſſume ſingular forms of arches and pillars, &c. and the ſpace from Trouphead to Portſoy, abounds in uncommon rocks, and ſingular marine productions. The caves of Nigg, in Roſsſhire, may be worth viſiting; and the more northern ſhores preſent innumerable wild ſcenes of ſavage nature. Near Lathron, in Caithneſs, is a large cave, into which the inhabitants fail to kill ſeals. Noſs-head preſents a ſingular quarry of ſlate, marked with various metallic figures. The iſles Stroma, near the northern ſhore, perſerve dead bodies for a long time without corruption [20]. It may, perhaps, be eſteemed a natural curioſity, that the river of Thurſo was ſo abundant in ſalmon, that 2500 have been caught in one morning. Near Tong is the cave Fraſgill, about fifty feet high, and twenty wide, variegated with a thouſand colours, which are loſt in each other with a delicacy and ſoftneſs that no art can imitate [21]. On the eaſt of Durneſs, is the cave of Smo, within which is the reſemblance of a gate, ſucceeded by a ſmall lake of freſh water, containing trout; the extent of this ſubterraneous lake, has never been explored: and near Sandwit is ſaid to be a ſmall grove of hazels, about four inches high, bearing nuts. The ſingularity of the coaſt of Edrachills, ſouth of Loch Inchard, has already been mentioned. But the verdant paſtures of Farouthead and Cape Wrath, may well be eſteemed

[20] Bryce's Map, directed by Mac Laurin. [21] S. A. III. 519.

a natural

a natural curioſity in that diſtant region, where the want of roads and bridges remains a diſgrace to the country. The weſtern coaſt of Roſsſhire does not ſeem to contain any object worth mentioning, and that diſtrict remains to be explored by the curious traveller. We only know the grand cataract of Kirkag river, and the cave of Gandeman, near Aſſynt point. The caſcade of Glamma, in the heights of Glen Elchaig, is truly ſublime, amidſt the conſtant darkneſs of hills and woods. Ben Nevis will, of courſe, attract notice from its ſingular form and elevation According to Mr. Williams[22], it conſiſts of one ſolid maſs of red granite, which he traced at the baſe for four miles along the courſe of a rivulet on the eaſt; the height of this maſs he computes at 3600 feet, and above it are ſtratified rocks, the nature of which he does not explain; but, he ſays, that thoſe on the ſummit are ſo hard and tough, that wrought iron falls ſhort of them. The ſtupendous precipice, on the north-eaſt ſide, exhibits almoſt an entire ſection of the mountain. In Argyleſhire, the marine cataract of Loch Etif, the beautiful lake of Awe, and environs of Inverary, preſent the chief objects of curioſity. NATURAL CURIOSITIES.

SCOTISH ISLES.

THE Iſlands that belong to Scotland are numerous and important, and fall naturally into three grand diviſions; the Hebudes *, or Weſtern Iſlands; the Orkneys; and the iſlands of Shetland. Scotiſh Iſles.

On paſſing the conic rock, called Ailſa, towards the north, two beautiful iſlands adorn the Firth of Clyde, thoſe of Arran and Bute[1]. The firſt is about twenty-three miles in length, by nine in breadth, and has 7000 inhabitants. The chief place is the village of Ranza; and Arran.

[22] Vol. ii. 63.

* This name was corrupted by Hector Boyce, into Hebrides, a name ſtill retained by thoſe who prefer the old mumpſimus, to the new ſumpſimus. Boyce was miſled by an edition of Solinus, Venice, 1491. 4to. in which, among many errors of the preſs, Ebrides is put for Ebudes.

[1] Pennant's Voyage, 168.

Brodic

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Brodic caſtle is memorable in hiſtory. The exports, are black cattle and barley [2]. Mr. Jameſon has recently publiſhed an account of this iſland, particularly its mineralogy, from which it appears that it is a mountainous region: and Goatfell is near 3000 feet in height. The ſouthern parts of the iſland preſent low and cultivated grounds; the baſe is chiefly ſand-ſtone and granite, the former traverſed by veins of baſalt. Near Lamlaſh, is an extenſive vein of pitch-ſtone, of a greeniſh colour, and the black alſo occurs. There is alſo granitine, compoſed of quartz, felſpar, and hornblende; micaceous ſchiſtus likewiſe abounds; there is little coal.

Bute.

Bute is about twelve miles in length, by four in breadth; inhabitants about 4000; the chief town is Rothſay, and in the vicinity is Mount Stuart, the ornamented reſidence of the Marquis of Bute, and worthy of the diſtinguiſhed taſte of the noble proprietor.

Hebudes.

Ilay.

To the weſt of the Cherſoneſe of Cantire, begin the Hebudes, or Weſtern Iſlands, properly ſo called. The firſt is Ilay, about the ſame length as Arran, but nearly eighteen miles in breadth. Ilay produces many black cattle, which are exported, and ſometimes paſs as far as England [3]. But the ſheep are rare; ſmall horſes are much uſed, as the country is not very mountainous. This iſle belongs to Mr. Campbell of Shawfield. Inhabitants about 7000. Lead mines were here diſcovered in the ſand-ſtone, 1763; this lead is, as uſual, mingled with ſilver. Copper has alſo been found, and there are appearances of emery, and even of plumbago. At Saneg-mor is an intricate cave.

Jura.

Jura is divided from the laſt by a narrow ſound: it is about twenty miles in length, but the breadth ſeldom more than five. It is one of the moſt rugged of the Hebudes, which, in general, are mountainous regions. The paps of Jura, a line of conic hills, preſent a ſingular appearance: they are on the weſtern ſide of the iſland, and almoſt bare of vegetation [4]. The beſt crops are potatoes and barley; and the iſle contains abundance of peat. The cattle are ſmall, but the ſheep excellent. Minerals, iron-ore and manganeſe; and there is a quarry of ſlate. The noted gulph or whirlpool of Brecan, or Corryvrekan, is on the northern extremity of Jura [5].

[2] Stat. Account, vol. ix. p. 169. [3] S. A. xi. 278. [4] S. A. xii. 318. [5] Knox's View, ii. 451.

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To the weſt of Jura are the iſles of Oranſa and Colonſa; and the ſtrait between them being dry at low water, they may be conſidered as one iſland, about ten miles in length. Soil generally light and arable, producing barley and potatoes. The venerable ruins of the ancient monaſtery of Canons regular, in Colonſa now exiſt no longer; but thoſe of a curious priory in Oranſa ſtill remain [6]. Scotish Isles.

The next iſle of any conſequence is that of Mull, one of the largeſt of the Hebudes, and ſurrounded with ſmaller intereſting iſlands. Mull is about twenty-eight miles in length, by a medial breadth of about eighteen. An intelligent traveller informs us, that the population is about 7000 [7]. The climate cloudy and rainy. Chief diet of the people, potatoes or barley-meal, with a little fiſh; drink pure water, ſometimes a little whiſky. Hovels conſtructed of whin; and the thatch guarded againſt the wind with large ſtones, the ſmoke aſcending by a a hole in the roof. The ingenious author obſerves, that the Eſquimaux, and Laplanders, prepare better reſidences. On the N. E. is the new village of Tobermory, which it is hoped will be proſperous. According to St. Fond, this iſland contains a large portion of baſaltes; and the mountain of Ben More preſents to his eye appearances of lava. On the north of Aſhnacregs he diſcovered a curious wall of baſalt, forming a kind of ancient circus. It is, indeed, not a little remarkable, that while the oppoſite ſhores of Argyle preſent the ſame red granite which here pervades Scotland, in a line from the N. W. to the S. E. as already mentioned, yet Mull, which is directly in that line, ſeems to diſplay no appearance of it, a circumſtance which adds to the credibility, that in this neighbourhood may have been an ancient volcano, which deranged the courſe of nature. For though the volcanic ſyſtem have been puſhed by ſome French writers to a ludicrous exceſs, yet, when we conſider the numerous volcanoes exiſting in Kamſchatka, and particularly along the Andes, in South America, by many believed to have been a continent of later formation than thoſe of the other hemiſphere, it may ſeem mere prejudice, not to allow the exiſtence of volcanoes, in certain inſtances; though fire be in general too potent an agent for the mild progreſs of nature, and, indeed, nearly accidental, while water is Mull.

[6] Stat. Acc. xii. 327. [7] St. Fond, tome ii. p. 89.

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Scotish Isles.

her grand and univerſal engine: but, on the other hand, when we reflect that baſalt is ſtrongly impregnated with iron, and that the baſaltic columns are alſo found at Edinburgh, at Dichmont, Clydeſdale, and in Skey, and extend over great part of the county of Antrim, we muſt allow a circle of about 600 miles for this eruption, far too vaſt for any volcano or volcanoes, and probably ariſing from the fermentation of iron in the interior of the globe. Mull ſtands in the centre of ſeveral ſmall but intereſting iſles. On the eaſt is Liſmore, fertile in oats, bigge, or beer, often called by the vague name of barley, though it be a very diſtinct ſpecies from the Engliſh barley. This iſle was anciently the chief ſeat of the biſhops of Argyle, who were thence denominated Biſhops of Liſmore, and ſome ruins of their reſidence remain: it was in conſequence well repleniſhed with deer, and fables have ariſen that it was once a foreſt. To the ſouth of Liſmore occurs Kerrara, remarkable for the death of Alexander II, in 1249 [8]. To the vulcaniſt St. Fond [9], Kerrara ſeems partly volcanic, as it produces baſalt; but it has alſo ſlate, and a fibrous micaceous ſchiſtus, compoſed of quartz, ſteatite, and mica.

Icolm-kill.

But the moſt curious objects in the vicinity of Mull, are Icolm-kill, and Staffa. Hyona, or Icolm-kill, is about three miles long, by one broad, and is venerable as the primitive ſeat of Scotiſh literature and religion, founded by St. Columba in the ſixth century. Its hiſtory and ruins have been often deſcribed; but, it may be added, from a recent traveller, that the iſle produces beautiful white marble, and large blocks of jaſper, or rather indurated ſteatites [10]. The ſacred edifices are partly conſtructed of red granite, reſembling the Egyptian, which forms Icolm kill, and the iſle of Nuns adjacent, fragments of the great granitic chain, formerly mentioned. Some parts of the iſle are ſaid to preſent green and red jaſper, elegantly veined, and ſome ſpecimens of zeolite; in the bay of Martyrs, on the E. ſide, is found hornblende; and in the ſmall haven, on the oppoſite part of the iſle, are immenſe numbers of beautiful pebbles, chiefly ſerpentine, jaſper, granite, marble, lapis ne-

[8] Pennant, 357. [9] Tome ii. 170.

[10] Garnett, I. 266, corrected by Jameſon, in his Mineralogy, and by the ocular obſervations of a friend.

phriticus

phriticus, nephritic aſbeſtos, violet coloured quartz, and porphyry. Theſe pebbles are rounded, and finely poliſhed by the tide, which rolls immenſe quantities of them backwards and forwards, with a noiſe like thunder [11]. In botany this iſle produces the beautiful ſea bugloſs, and the ſea holly; the Lapland willow, a ſcarce ſhrub, grows not far from the marble quarry: navel wort, marſh treſoil, and dwarf juniper, are alſo found. SCOTISH ISLES.

Staffa, about ſix miles to the N. of Hyona, was firſt introduced to public notice by Sir Joſeph Banks. Buchanan has mentioned the iſle, but not its grand ſingularities, its beautiful baſaltic columns, and one of the moſt ſurpriſing objects of nature, the vaſt baſaltic cavern, called Au-ua-vine, or the harmonious grotto, a name now connected, as every thing is, with Fingal; but which may ariſe, either from a melodious ſound, produced by the percuſſion of the waves at the furtheſt extremity, or from the exact order in which the columns are diſpoſed [12]. Height of the entrance fifty-ſix feet, breadth thirty-five, thickneſs of the exterior vault twenty. The depth, or length of the cavern is no leſs than 140 feet; and when St. Fond has repreſented the exterior light as penetrating the whole, he has committed a great error in perſpective. Staffa.

To the N. W. of Mull, are the iſles of Tirey and Col, the former producing a moſt beautiful marble, of a roſe-colour, penetrated with ſmall irregular cryſtals of green hornblende, and which the French naturaliſts have from the name of the iſle called Tirite, no ſimilar marble being any where found. Tirey is generally plain and fertile. Col, on the contrary, is rocky, but has ſeveral ſmall lakes, repleniſhed with fiſh. Dr. Johnſon has paid a deſerved tribute to its lord [13]. Tirey.

Another groupe conſiſts of Skey, in the Scandinavian ſtyled Skua, and the ſurrounding iſles. Skey is the largeſt of the Hebudes, being about forty-five Engliſh miles in length, and about twenty-two in breadth. Inhabitants about 15,000; chief exports black cattle and ſmall horſes: the land, as uſual in the Hebudes, rough and hilly. Muggaſtot is the reſidence of the Lord Macdonald, Dunvegan that of Mr. Macleod. At Struan is a Daniſh fort, ſixty feet diameter, and eighteen high [14]. A high hill, near Talyſkir, preſents a ſeries of baſaltic columns, the moſt Skey.

[11] Garnett, ib. [12] St. Fond, tome ii. p. 59. [13] Journey, p. 295. [14] Pennant, pl. 36.

Scottish Isles. northern of this claſs: pillars pentagonal, and about twenty feet high *. Dr. Johnſon, and his attendant Mr. Boſwell, have well deſcribed the ſtate of life and manners in Skey. The houſes are chiefly turf, covered with graſs. The face of the country wild, heathy, and deluged with continual rains. To the ſouth of Skey are the iſles Rhum and Eig: the firſt ſtill produces red deer, an animal now rare in the iſles; and in Eig is a curious cave, with forty ſkeletons, remains of the people here ſlain by a Macleod. To the N. E. of Skey are Raza and Scalpa; the harbour of Portree is protected by the former iſle, and has a village of the ſame name, the only one in the country. The other iſles in this groupe offer little memorable. Canna and Eig contain baſaltic pillars, and in the former is Compaſs Hill, which ſtrongly affects the needle.

It now remains to give ſome idea of the exterior chain of the Weſtern Iſles, forming, as it were, a barrier againſt the Atlantic.

Rona. Two ſmall and remote iſles have attracted conſiderable notice. The firſt is that of Rona, about twelve leagues to the N. W. of Cape Wrath, and about thirty leagues W. from the Orkneys. This little iſle, with its companion Suliſka, or Bara, has almoſt eſcaped from the Scotiſh maps, being little known and rarely viſited. In the laſt century, Sir George M'Kenzie, of Tarbat, afterwards Earl of Cromarty, drew up a ſhort account of Rona, from the oral information of inhabitants, at that time conſiſting only of five families [15]. As the iſle could only ſupport thirty inhabitants, any ſupernumeraries were ſent to Leuis, to their lord, the Earl of Seaforth, to whom they paid yearly a ſmall tribute of meal and feathers. Drift timber ſupplied their only fuel: he adds, that the wool of their ſheep was bluiſh, and aſcribes the ſame colour to thoſe of Hirta, or St. Kilda.

Hirta. The ſmall iſle of Hirta, or St. Kilda, muſt have attracted much notice, even in Leſley's time, for in his map he has repreſented it as about ſix times the ſize of Skey, while in truth it is only two miles and a half long, by one mile in breadth. St. Kilda is about twelve leagues to the weſt of North Viſt; and has been repeatedly deſcribed, the ſingular

* On the oppoſite ſide of the iſle, near Port Ree, is another baſaltic rock, of great height. Stat. Acc. xvi. 140. In Portree pariſh is a large cave, full of curious ſtalactites. Ib. 147.

[15] Monro's Deſcript. of the W. Iſles, in 1549. Edin. 1774. Duodecimo, p. 63. The Stat. Acc. xix. 271, adds nothing.

manners of its inhabitants having excited conſiderable attention, and for a minute account, the reader muſt be referred to Martin and Macauley. Sheep abound here, and in the little iſles adjacent, probably of the ſame kind with thoſe of Shetland; but the late accounts ſay nothing of the colour, and only ſpeak of the fecundity. Scotish Isles.

Having thus briefly mentioned theſe remote and little viſited iſles, the plan here followed muſt be reſumed by ſome account of Leuis, the principal iſland of the Weſtern chain. It is about fifty miles in length, by twenty in breadth. The face of the country conſiſts of a heathy elevated ridge full of moraſſes S. W. to N. E.; but near the ſhores are ſeveral verdant vales capable of cultivation. The Harris, or ſouth end of this iſle, is ſtill more mountainous, and preſents what is called a foreſt, becauſe ſome deer are there found. James VI attempted to introduce induſtry into the Hebudes by planting a Dutch colony at Stornaway in Leuis; but it was ſoon extirpated by the inhabitants.* Stornaway is however now a conſiderable and flouriſhing town, with an excellent harbour; the view from which, far to the eaſt, preſents the rugged mountains of Sutherland and Roſs; and near it is the ſeat of the Earls of Seaforth, formerly proprietors of the iſland.[16] Beſides cottages, there are about ſeventy houſes covered with ſlate. The ſeaſons in Leuis are oppreſſed with rain, as uſual in the Weſtern highlands and iſles; but there is a conſiderable fiſhery. The crops are oats, bigg, and potatoes; no trees will thrive except alder, and mountain aſh; and hardly a ſhrub appears: but there are many black cattle and ſheep; nor is there any want of ſmall horſes. But the chief reſource of Leuis muſt be the fiſhery, till induſtry ſhall have found the means of draining the upland marſhes, and ſpreading an exuberance of lime as manure. At Claſſernes is a remarkable judicial circle, conſiſting of an avenue of thirty- Leuis.

* Mr. Marſhall, in his Travels in Holland, &c. vol. i. p. 175, obſerves that, in the opinion of the Dutch, the only mean of eſtabliſhing a fiſhery in the weſt of Scotland, would be to build a city, and make it the ſeat of the whole undertaking, as he there explains at length. But ſuch a city would be far better ſituated on the weſtern coaſt of Scotland, as the example of Stornaway proves. There is no town between Campbletown and Thurſo, a ſpace of 300 miles, though there ſeems to have been one on Loch Tong. Knox, ii. 473.

[16] Stat. Acc. xix. 241.

Scotish Isles.

nine ſtones about ſeven feet high, cloſing in a circle of twelve ſtones with one in the centre thirteen feet in height.

North Viſt.

To the ſouth of Leuis is North Viſt, about twenty-two miles in length from E. to W. and about ſeventeen in breadth N. to S., for recent diſcoveries have reſtored this iſle to its proper form, among many other improvements which have taken place within theſe few years in Scotiſh geography. The face of the country correſponds in general with that of Leuis; and trees are equally unknown. Potatoes are generally cultivated. Weſterly winds, with rain or fog, uſurp two thirds of the year. Lord Macdonald is the proprietor."

South Viſt.

The ſmall iſle of Benbecula, and ſome others, lie betwixt North and South Viſt; the latter is about twenty-three miles in length N. to S. by about ten in breadth W. to E. The moraſsy central chain extends alſo through this iſle; but to the eaſt are dry hills covered with heath and verdure. The productions alſo reſemble thoſe of Leuis; and there are many ſmall lakes full of excellent trout. Chief exports black cattle and kelp. This iſle is alſo naked of wood.

Orkneys.

The iſlands of Orkney and Shetland remain to be deſcribed. The Orkneys form a numerous groupe, around the Main Land, or what, by ſome new and fabulous term, is called Pomona.[18] The Main Land is about twenty-five miles in length E. to W. by about thirteen in breadth N. to S. Kirkwall, the chief town of the Orkneys, contains about three hundred houſes; and has a ſtately cathedral dedicated to St. Magnus, length 226 feet, height of the roof 71, of the ſteeple 133. It is built of freeſtone, and by the good ſenſe and taſte of the Orcadians is preſerved more entire than even the Cathedral at Glaſgow.[19] Oppoſite ſtands the biſhop's palace, now called a caſtle. The chief exports of Kirkwall are beef, pork, butter, tallow, hides, calf ſkins, rabbit ſkins, ſalted fiſh, oil, feathers, linen yarn, and coarſe linen cloth, kelp,* and in fruitful years corn. The chief imports are wood, flax, coal, ſugar, ſpirits, wines, tobacco, and ſnuff, flour and biſcuit, ſoap, leather, hard-

[17] Stat. Acc. xiii. 300.

[18] The old accounts are Wallace's 1693, and Brand's 1701; the modern, the Statiſtic Survey.

[19] Stat. Acc. vii. 531.

* Sanda produces great quantities of kelp; when the Orkneys in general may yield 2,500 tons, 500 and 600 are drawn from that iſle only. S. A. vii. 455.

wares,

wares, broad cloth, printed linens and cottons. In 1790 the exports were valued at 26,598l.; and the imports at 20,803l. Manufactures are linen yarn, and coarſe linens, and kelp: this laſt was introduced about ſixty years ago, and has been ſince diffuſed over the Highlands and iſles. In moſt parts of the Main Land the ſoil is good, though ſhallow, with a calcareous bottom. The horſes are ſmall but ſpirited; and the cows, though alſo ſmall, yield excellent milk. The ſheep in the iſlands of Orkney are computed at 50,000. Swine alſo abound of a dirty white colour, and diminutive ſize. The numbers of ſea fowl may be eaſily imagined. The Norſe language has yielded to the Engliſh, and the manners of the people are ſingularly civilized for ſo remote a region. The Main Land contains ſeveral of thoſe edifices called Piks houſes, and on its weſtern ſide at Yeſtnaby, near the houſe of Skeil is a ſingular natural pavement, conſiſting of ſtones figured in various forms, reſting on a bed of red clay reclining on a high rock: the length of this ſingular pavement is about a quarter of a mile, breadth about twenty feet.[20] The Ward Hill of Hoy, the higheſt in this region, (1620 feet,) ſtands in the iſland of the ſame name, the S. E. promontory of which is erroneouſly called Walls in the Engliſh maps, inſtead of the native name Waes: near its bottom is the noted dwarfy ſtone, about 34 feet long by 17 broad, and 8 high, hollowed out by art, probably for the reſidence of ſome hermit. SCOTISH ISLES.

The inhabited iſlands of Orkney are computed at twenty-ſix, and the people at 23,053;[21] the baſes are chiefly ſandſtone, and ſandſtone breccia, as appears from Mr. Jameſon's recent Mineralogy of the Scotiſh Iſles. Iron is found, and perhaps ſome lead; but the mention of ſilver and tin ſeems fabulous. Hazles are ſeen, and ſometimes willow, and ſome aſh trees; thorn buſhes, and plumb trees, ſtill exiſt in the Biſhop's garden. But in the moraſſes, trunks of ancient trees are found, ſometimes thirty feet in length. It is ſurpriſing that in the preſent progreſs of every art, numerous experiments have not been made to diſcover ſome tall tree, which can endure the ſpray of the ocean; for if a fence of ſuch were firſt reared, many other kinds might flouriſh under its protection. The mountain aſh, or the birch, which in Lapland

[20] Wallace, p. 24. Brand, p. 43. [21] S. A. xx. 612.

is

Scotish Isles.

is the laſt offſpring of expiring vegetation, may perhaps be found to anſwer this deſcription.

Shetland.

The iſlands of Shetland preſent another groupe ſimilar to thoſe of Orkney; with a Main Land or chief iſland in its centre. The Main Land is much interſected by the ſea: and is about fifty-ſeven miles in length, by about ten or twelve miles of medial breadth.* The other iſles are generally ſmall, yet twenty-ſix are ſaid to be inhabited. "On viewing theſe iſlands in general, a wonderful ſcene of rugged, bleak, and barren rocks preſents itſelf to our view. No tree or ſhrub is to be ſeen, to relieve the eye in wandering over theſe dreary ſcenes. Sometimes however a few ſcanty portions of cultivated ground catch the eye of the traveller, exciting emotions of pleaſure, and forming a ſtriking contraſt to the barren heath-covered mountains, which ſkirt them. The weſtern part preſents many ſcenes as wild and ſterile as can well be conceived; grey rocks riſing from the midſt of marſhes or pools, and ſhores bounded by awful ſea-beat precipices, do not fail to raiſe in the mind ideas of deſolation and danger.

"The coaſts are in general rugged and precipitous, preſenting in many places ſcenes truly grand and magnificent; vaſt rocks of various heights, dreadfully rugged and broken, oppoſing their rude fronts to all the fury of a tempeſtuous ocean; which in ſome places has formed great detached pillars, in others has excavated grand natural arches and caverns that mock all human magnificence; and ſtrike the beholder with that awe and wonder, which muſt affect every one on viewing theſe amazing wrecks of nature."[22]

Such is the animated deſcription of a late writer; who adds that the eaſt ſide of the Main Land, and other iſles, is comparatively low, but the weſt lofty and rugged. This is well known to be the caſe with moſt

* We have better charts of the coaſts of New Holland, than of the iſles of Orkney and Shetland. Captain Donnelly's chart of the Shetland iſles, ſeems the moſt accurate, in which the Main land correſponds in length with Leuis, while Ainſley's would give a length of almoſt ninety miles. Yell and Unſt, ſeem alſo more properly diſpoſed in Captain Donnelly's map. The Daniſh Captain Von Lowenorn (Zach's Geographical Journal, May, 1799) found that the Shetland iſles were about one third ſhorter than repreſented in the Engliſh map (Preſton's); which alſo puts the northern extremity half a degree further north, than it was found by minute obſervations. Lowenorn publiſhed a map of theſe iſles, in 1787.

[22] Jameſon's Min. p. 2, 3. 8vo.

mountains

Scotish Isles.

mountains and iſlands, becauſe the winds and tempeſts from the weſt have more power than thoſe from the oppoſite quarter. The hills in the Main Land run in three ridges from N. to S.; they are generally round and of little height. Ronas, the higheſt, ſtands detached in the N. W. corner of the Main Land; and is about 1500 feet above the level of the ſea. When the ſame writer attempts to eſtabliſh that all chains of mountains run according to the length of the country, he eſpouſes a mere theory in oppoſition to ſtubborn facts. The mountains of North America, the Uralian and ſome other chains in Siberia; the tranſverſe chain through the centre of Africa E. to W. all eſtabliſh the contrary poſition. In Europe the mountains of Spain, the Alps, the Carpathian mountains; and, not to crowd examples, thoſe of Ireland, Scotland, and even of England, have no connection with the length of the country, nor can a ſtronger proof be produced of the boldneſs of theory than thus to remove even mountains from their ſeats; which proceed in every direction, bend and terminate without any viſible cauſe, and have ſeldom any connection with the form of a country, as the deſtructive powers of nature external and internal aſſail mountains even more than plains.

The hills in Shetland are chiefly compoſed of ſand-ſtone, breccia, &c. The baſis ſeems gneiſs, and micaceous ſchiſtus, which are ſometimes expoſed to the air. Limeſtone is alſo found and ſome granite; but on the whole the maſs is arenaceous. A kind of brown wacken is found in Papa Stour; where may alſo be traced ſteatite, calcedony, red jaſper, and fluate of lime. In Unſt, the moſt northern of theſe iſles, appear hills of ſerpentine, containing actinote, labrador hornblende, tremolite, and talc: and the Shaw, the moſt northern point of this iſle, and of the Britiſh dominions, conſiſts chiefly of gneiſs. Unſt alſo produces iron-ſtone, jaſper or rather ſerpentine, pure rock cryſtals, and garnets of an elegant form. This remote iſle ſupplies black oats, bigg, potatoes, cabbages, and various garden roots and plants, particularly delicate artichokes.[23] In general the granite, and micaceous ſchiſtus, appear furtheſt to the north and weſt. Sappare is found in the S. W. cliffs of the Main Land; and it is ſaid there are appearances of copper

[23] Stat. Acc. v. 185.

in

Scotish Isles.

in the ſame quarter. It was in the form of pyrites, and was worked for ſome time, till the vein gradually decreaſed and was abandoned.[24] What is called the bog ore of iron ſeems to abound in Fetlar, and of excellent quality.[25]

The climate of the Shetland iſles is variable, and diſturbed with rains and thick fogs. The froſts are ſeldom ſevere, and ſnow rarely continues long on the ground. The inhabitants are indeed ſufficiently wretched, without additional evils; and a benevolent government ought to pay a particular attention to thoſe diſtant priſoners. The coruſcations of the Aurora Borealis illuminate the long gloom of winter, and delight the inhabitants, who call them *merry dancers*. The arable land is moſtly near the coaſt, and produces a coarſe kind of oats and bigg. Potatoes have lately formed an addition of ſingular advantage; but turnips, parſnips, and carrots, are confined to the gardens of gentlemen. The chief food of the inhabitants conſiſts of fiſh, and various kinds of ſea fowl, which cover the rocks: the captors of the laſt ſhew ſingular ſkill and intrepidity, and often meet with a violent fate amidſt the ſtupendous precipices. The cattle rather larger than thoſe of Orkney, and the butter excellent if properly prepared. Sheep are not uncommon, and have been recently praiſed for the fineneſs of their fleece.

[24] Jameſon, p. 21.

[25] S. A. xiii. 283. From Mr. Jameſon's Mineralogy of the Scotiſh Iſles (2 vols. 4to.) it appears that Ailſa conſiſts chiefly of mingled hornblende and felſpar: Arran of reddiſh ſand-ſtone, like Shetland, with veins of baſalt and pitch-ſtone; but Goatfell preſents micaceous ſchiſtus and granite, with yellow cryſtals, or mock topazes, commonly ſold as Cairngorm ſtones. Bute, ſimilar. Ilay, limeſtone, with granular quartz. Jura, granular quartz, with veins of baſalt: this granular quartz is by Kirwan called arenaceous quartz, or primitive ſiliceous ſand-ſtone. Seil, ſlate; Liſmore, limeſtone, with baſalt. Mull has much baſalt, with ſand-ſtone, limeſtone, &c. in the S. W. beautiful granite. Icolm-kill, moſtly granite, and hornblende rock, with one quarry of marble. Coll, gneiſs, with granite. Tirey, hornblende rock, gneiſs, and baſalt, with a quarry of beautiful marble. Eig, baſalt, with limeſtone, &c. Rhum, red ſand-ſtone, with veins of baſalt; mountains, hornblende, and felſpar. Canna baſaltic; that at Compaſs-hill affects the needle. Skey, baſalt, with hornblende, limeſtone, &c. Raſa, ſand-ſtone, and beautiful porphyry, with a blue baſis.

The exterior chain of the weſtern Iſles, was not viſited by Mr. Jameſon; but Leuis ſeems to abound in lime-ſtone, while Bernera is ſaid to conſiſt of amianthus.

The Orkneys conſiſt almoſt entirely of ſand-ſtone, maſſy and ſchiſtoſe: at Skeil, on the W. of the Main Land, the ſand-ſtone, which looks ruſty, as if ſlightly impregnated with iron, is worn (as already mentioned) into many ſingular forms, by the action of the weather, a circumſtance which has greatly impreſſed the old deſcribers of the Orkneys. A few miles around Stromneſs are granite, gneiſs, micaceous ſchiſtus, and hornblende.

The

The horſes have mettle and beauty, and on account of the ſingular minuteneſs of their ſize have become objects of luxury and curioſity in England. The ſwine are ſmall, and little propagated becauſe they injure the paſtures; an evil eaſily obviated by the ſimple practice of putting a ring through the noſe. SCOTISH ISLES.

Lerwick, the chief town or rather village, ſtands on an excellent harbour called Braſſa Sound, formed by the little iſle of Braſſa on the eaſt of the Main land, and formerly greatly frequented by the Dutch fiſhers. Lerwick is an irregular village, perched on rocks; and contains about 150 families. Near it is one of thoſe rude edifices called Piks houſes; and ſeveral others appear in the iſles of Shetland, particularly in Fetlar: there is alſo a rock abounding with iron ore which affects the compaſs. Lerwick.

The herrings appear off Shetland in vaſt columns, in the month of June, altering the very appearance of the ocean, which ripples like a current. Theſe columns have been computed to extend five or ſix miles in length by three or four in breadth, and in bright weather reflect a variety of ſplendid colours. They afterwards divide to the E. and W. of Great Britain, furniſhing a providential ſupply of food to many barren diſtricts. The chief exports of Shetland are fiſh of various kinds, chiefly herrings, cod, ling, and torſk, or tuſk. The inhabitants of the Shetland iſlands in 1798 were computed at 20,186,[25] more than the country can well ſupport, eſpecially in the preſent deficiency of intercourſe with the Dutch. They have of late become addicted to the uſe of tea and ſpirituous liquors, which will infallibly contribute to leſſen the population. In this diſtant region there are neither roads nor bridges, which may be pronounced the firſt ſteps in any country towards the progreſs of induſtry. The ſame deficiency occurs in the Orkneys, and even in the Northern extremity of Scotland; where however a road has been recently opened between Ullapool and Dornoch. The Swiſs form roads even in the Alps; and certainly the Scotiſh Highlands do not offer more inſuperable barriers to this moſt eſſential of all improvements.

[25] Stat. Acc. xx. 612.

IRELAND.

CHAPTER I.

Names.—Extent.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs.—Antiquities.

NAMES. THE large and fertile iſland of Ireland, being ſituated to the weſt of Great Britain, was probably diſcovered by the Phœnicians as early as the ſiſter iſland. On the firſt dawn of hiſtory, and when the North-weſt of Europe was as obſcure to the Greeks, as the iſlands on the North Eaſt of Siberia were recently to us, it would ſeem that Ireland conſtituted one of the Caſſiterides. The poems aſcribed to Orpheus deſerve no credit, but it appears that the iſland was known to the Greeks by the name of Juverna, about two centuries before the birth of Chriſt. When Cæſar made his expedition into Britain, he deſcribes Hibernia as being about half the ſize of the iſland which he had explored; and while the Romans maintained their conqueſts in the latter region, Ireland continued of courſe to be well known to them, and Ptolemy has given a map of the iſland which is ſuperior in accuracy to that which repreſents Scotland. Towards the decline of the Weſtern Empire, as the country had become more and more known, and had been peopled with various tribes, the Romans diſcovered that the ruling people in Ireland were the Scoti; and thenceforth the country began to be termed Scotia, an appellation retained by the monaſtic writers till the eleventh

eleventh century, when the name Scotia having paſſed to modern Scotland, the ancient name of Hibernia began to reaſſume its honours. It is ſuppoſed that this name, and the Gothic denomination Ireland, are mere modifications of the native term Erin, implying the country of the weſt. Names, Extent, &c.

The extent of this noble iſland is about 300 miles in length, and about 160 at the greateſt breadth. The contents in ſquare miles may be computed at 27,457;* and the population being about three millions, there will be about 114 inhabitants to each ſquare mile. Extent.

It is probable that the original population of Ireland paſſed from Gaul, and was afterwards increaſed by their brethren the Guydil from England. About the time that the Belgæ ſeized on the ſouth of England, it appears that kindred Gothic tribes paſſed to the ſouth of Ireland. Theſe are the Firbolg of the Iriſh traditions; and appear to have been the ſame people whom the Romans denominated Scoti, after they had emerged to their notice by not only extending their conqueſts to the north and eaſt in Ireland, but had begun to make maritime excurſions againſt the Roman provinces in Britain. But Ireland had been ſo much crowded with Celtic tribes, expelled from the continent and Britain, by the progreſs of the German Goths, that the Belgæ almoſt loſt their native ſpeech and diſtinct character; and from intermarriages, &c. became little diſtinguiſhable from the original population except by ſuperior ferocity, for which the Scoti, or thoſe who affected a deſcent from the Gothic colonies were remarkable; while the original Gael ſeem to have been an innocuous people. Original Population.

The map of Ireland by Ptolemy, above-mentioned, is the firſt geographical document of the iſland. The general ſhape, rivers, and promontories, are delineated with as much accuracy as could have been expected. Nay as we advance into the middle ages, the geography of Ireland becomes more obſcure. The chief tribes mentioned by Ptolemy are the Darni upon the North eaſt, the Venicni and Robogdii on the North weſt. Beneath them are the Nagnati, Auteri, and Gangani, on the Weſt; the Erdini in the centre; and the Voluntii, Eblani, and Cauci, on the Eaſt; ſucceeded by the Southern tribes of the Menapii, Progreſſive Geography.

* Beaufort, p. 14, ſays 30,370 Engliſh miles.

Names, extent, &c.

Brigantes, Vodii, Ivelni, Velabri, and Luceni. Ptolemy alſo mentions ten towns; of which the chief is Eblana now Dublin. In the middle ages we find the Dalriadi on the north-eaſt; and the Crutheni on the north-weſt. The large tribe of Nelli occupy much of the centre. The Voluntii ſeem transformed into the people of Ullagh; the Erdini of Ptolemy yield the name to Argialla; and the Nagnati to Maigh Nais. The Gangani of Ptolemy ſeem the Galeng of the middle ages; the Menapii, &c. muſt be traced in Muman, or preſent Munſter. The towns mentioned by Ptolemy might alſo be traced with ſome degree of accuracy.

The ravages of the Danes, in the ninth and following centuries, cannot be ſuppoſed to throw much light on the progreſſive geography of Ireland: but the ſettlements of the Engliſh under Henry II certainly contributed to that end, for Giraldus Cambrenſis at that period compoſed his deſcription of Ireland, which amidſt numerous fables contains ſome curious facts: and the geography of Ireland was little better known till the reign of Elizabeth, when Stanihurſt publiſhed his deſcription, which was ſoon followed by that of Spenſer the poet. The moſt remarkable diſtinction introduced by the new invaders into Ireland was that of the Engliſh Pale, or circuit of a few counties around Dublin, within which the Engliſh language was chiefly ſpoken. So inconſiderable indeed were the Engliſh poſſeſſions in Ireland, that the monarchs only aſſumed the ſtyle of Lords of Ireland, till the reign of Henry VIII, when king of Ireland became a part of the ſovereign's ſtyle. Nor was Ireland completely ſubjugated till the reign of the firſt James, who adds this merit to that of founding the American colonies; but mankind will ever be infatuated by the triumphs of war, and prefer a meteor to the pure light of a pacific reign.

Historical Epochs.

The firſt hiſtorical epoch of Ireland is its original population by the Celtic Gauls, and the ſubſequent colonization by the Belgæ.

2. The maritime excurſions of the Scoti againſt the Roman provinces in Britain.

3. The converſion of Ireland to Chriſtianity in the fifth century, which was followed by a ſingular effect; for while the maſs of the people retained all the ferocity of ſavage manners, the monaſteries pro-

duced many men of ſuch piety, and learning, that Scotia or Ireland became celebrated all over Chriſtendom. HISTORICAL EPOCHS.

4. This luſtre was diminiſhed by the ravages of the Scandinavians, which began with the ninth century, and can hardly be ſaid to have ceaſed when the Engliſh ſettlement commenced. The iſland had been ſplit into numerous principalities, or kingdoms as they were ſtyled; and though a Chief Monarch was acknowledged, yet his power was ſeldom efficient, and the conſtant diſſentions of ſo many ſmall tribes rendered the iſland an eaſy prey.

5. In the year 1170, Henry II permitted Richard Strongbow Earl of Pembroke to effect a ſettlement in Ireland, which laid the foundation of the Engliſh poſſeſſions in that country. There are however coins of Canute king of England, ſtruck at Dublin, perhaps in acknowledgment of his power by the Daniſh ſettlers.

6. Ireland began to produce ſome manufactures about the fourteenth century, and her ſayes or thin woollen cloths were exported to Italy. It is probable that theſe were produced by the Briſtolian colony, which had paſſed to Dublin, as mentioned in the deſcription of England.

7. Richard II king of England attempted in perſon the conqueſt of Ireland, but being imprudent and ill ſerved, nothing of moment was effected. The ſubſequent attempts of the Engliſh monarchs to accompliſh this purpoſe need not be enumerated.

8. In the reign of James I, Ireland became entirely ſubjugated; and colonies of Engliſh and Scots were eſtabliſhed in the North.

9. The chief mean of the aſſimilation of the countries having been completely neglected, namely, the univerſal inſtitution of parochial ſchools, for the education of children in the proteſtant religion and Engliſh language, the Iriſh continued a diſtinct people; and being inſtigated by their fanatic prieſts executed their dreadful maſſacre of the Engliſh ſettlers in 1641. This inſurrection was not totally cruſhed till Cromwell led his veterans into Ireland.

10. The appearance of James II in Ireland to reclaim his crown, may alſo deſerve a place.

11. The amazing progreſs of Ireland in manufactures and commerce, within theſe twenty years, may be claſſed as the moſt illuſtrious of its hiſtorical epochs.

12. The

Historical Epochs.

12. The deplorable events which have recently happened in Ireland, have led the way to its union with Great Britain, a meaſure which it is eagerly to be hoped will be productive of great reciprocal advantages.

Antiquities.

Upon a review of the more ancient of theſe hiſtorical epochs, and of the monuments which may be conſidered as belonging to each, it muſt be conſidered that the ediſices having been conſtructed of wood till the eleventh or twelfth century, it cannot be expected that any remains of them ſhould exiſt. Stone was chiefly employed in the conſtruction of funeral erections of various kinds; nor are barrows wanting in Ireland, being hillocks of earth, thrown up in commemoration of the illuſtrious dead. Other monuments commonly ſtyled Druidic may alſo be found in Ireland; ſuch as ſingle ſtones erect, circular temples or rather places of judgment, and the like, which may more properly be aſcribed to the Belgic colony.*

The converſion of Ireland to Chriſtianity was followed by the erection of a vaſt number of churches and monaſteries, the latter being computed to exceed one thouſand in number; but all theſe edifices were originally ſmall, and conſtructed of interwoven withes, or hewn wood; for St. Bernard, in the twelfth century, mentions a ſtone church as a ſingular novelty in Ireland.

But the Scandinavian chiefs muſt before this period have introduced the uſe of ſtone into the caſtles, neceſſary for their own defence againſt a nation whom they oppreſſed; and ſometimes even ſubterraneous retreats were deemed expedient, of which Ware and others have engraved ſpecimens. To the Scandinavian period alſo belong what are called the Danes Raths, or circular intrenchments; and ſome chapels, ſuch as thoſe of Glendaloch, Portaferry, Killaloe, Saul Abbey, St. Doulach, and Caſhel, if we may judge from the ſingularity of the ornaments, which however only afford vague conjecture. But of the round caſtles, called Duns in Scotland, and of the obeliſks engraven with figures or ornaments, few or none exiſt in Ireland. Under the Scandinavians the Iriſh coinage firſt dawns.

Of the eleventh and twelfth centuries many monuments, caſtellated or religious, may probably exiſt in Ireland. Brian Boro, king of

* See Ledwich's introduction to Groſe's Antiquities of Ireland, for Cromlechs in the county of Carlow, and a cave in Meath.

Munſter,

Antiquities.

Munſter, having been declared ſovereign of Ireland in the year 1002, he diſtinguiſhed himſelf by his virtues and courage; and Dermid III A. D. 1041—1073 was alſo an excellent and powerful prince. Under theſe monarchs and their ſucceſſors, Tirdelvac and Moriertac, the power of the Oſtmen or Scandinavians was conſiderably weakened. The native chiefs had been taught the neceſſity of fortreſſes, and were generally devoutly attached to religion; it is therefore to be inferred that many caſtles, churches, and monaſteries now began to be partly conſtructed in ſtone by architects invited from France and England; but perhaps the round towers were erected by native builders.

The caſtles, churches, and monaſteries, erected ſince the period of the Engliſh ſettlement might be counted by hundreds; and for them one general reference may be made to the works of Ledwich and Groſe: yet it is to be regretted that in collections of that kind the edifices are not arranged in the chronological order, as nearly as can be judged, of their erection. Among ſmaller reliques of antiquity, the golden trinkets found in a bog near Cullen, in the ſouth, deſerve mention: as gold was found in Gaul, they are perhaps ornaments of the ancient chiefs brought from that region.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtic Geography.—Government.—Population.—Army.—Navy.—Revenues.—Political Importance and Relations.

Religion. THE legal religion of Ireland is that of the church of England; but it is computed that two-thirds of the people are Catholics; and of the remaining third the Preſbyterians are ſuppoſed to conſtitute one half. The prevalence of the catholic religion is chiefly owing, as has already been hinted, to a neglect of education.

Eccleſiaſtic Geography. The eccleſiaſtic geography of Ireland comprizes four Archbiſhopricks, in themſelves an evidence of the great number of churches formerly exiſting; and eighteen biſhoprics.

Under the Archbiſhop of Armagh are the Biſhops of
- Meath
- Kilmore and Ardagh
- Dromore
- Clogher
- Raphoe
- Down and Connor
- Derry.

Under the Archbiſhop of Dublin
- Kildare
- Ferns and Laughlin
- Oſſory.

Under the Archbiſhop of Caſhel
- Waterford and Liſmore
- Limerick
- Killaloe
- Cork and Roſs
- Cloyne.

Under

Under the Archbiſhop of Tuam { Elphin, Cloyne, Killala and Achonry.* } Ecclesiastic Geography.

The catholics have alſo a hierarchy nearly ſimilar, but the metropolitans and biſhops are conſidered by the proteſtants as merely titular. The preſbyterians being here diſſenters, their form of eccleſiaſtic government neceſſarily approaches that of the independents.

The Government of Ireland was conſtructed upon the plan of that of England, being veſted in a houſe of commons, and another of peers, while the king was repreſented by a lord lieutenant or viceroy. But no act of importance was conſidered as valid, till it received the ſanction of the king and council of Great Britain. At preſent, Ireland being united to England, the form of government is of courſe identically the ſame. There are ſome minute variations between the ſtatute and common law of Ireland and thoſe of England. Government.

The population of Ireland has by ſome writers been recently ſwelled to the amount of four millions; but the moſt authentic documents ſeem to reſtrict the number to about three millions. Numerous emigrations have taken place from Ireland to the various Britiſh ſettlements; but no ſeparate colony of Iriſh has been founded. Population.

Beſides large contributions to the Britiſh army, Ireland in 1780 raiſed upwards of 40,000 volunteers, and has recently equipped a conſiderable militia and yeomanry. If we ſuppoſe every eighth perſon capable of arms, Ireland might raiſe a force of more than 300,000 men. Of mariners Ireland contributes an inadequate proportion, and inferior in ſkill to the Britiſh. Army. Navy.

The public revenues of Ireland were computed by an intelligent traveller[2] at about one million ſterling: or 6s. 8d. a head, when thoſe of England ſtood at 1l. 9s. Revenues.

With regard to the political importance and relations of Ireland, they Political Importance and Relations.

* Gough's Camden iii. 487. The Primacy is worth 8000l. a year; Derry 7000; the other biſhopricks from 4000 to 2000. Young, ii. 189.

[2] Young's Tour in Ireland.

Political Importance, &c.

would undoubtedly be great; but their weight has fortunately never been felt apart from thoſe of England. The confuſed ſyſtem of the old native government almoſt prevented Ireland from being conſidered in the ſcale of European ſtates; and ſince the introduction of a more civilized ſcheme, ſhe has been indiſſolubly attached to England. Monteſquieu has juſtly regarded it as a radical error in the politics of Louis XIV, that when he ſent troops to Ireland to reſtore James II, he did not ſeize the opportunity of eſtabliſhing a firm conqueſt of the iſland, which would eventually have proved of more ſolid advantage to France than all their idle plans of ambition, if they had even been realized. The great maſs of the people of Ireland being catholics, one of the ſtricteſt bonds which can unite nations was already formed; and the numerous ports of Ireland might, under the conduct and ingenuity of the French, have ſent forth numerous fleets, and have aſſiſted their ally to balance the naval power of England. But happily for Great Britain that opportunity was for ever loſt. After the great preponderancy which the Britiſh have now held at ſea, for more than a century, it is inconceivable that Ireland, an adjacent iſland, could have remained a ſeparate ſtate, without the ſpecial and previous conſent of England. Her commerce would have been totally at the command of her rival, and any riſing fleet of war would have been cruſhed in the very bud. If the Engliſh armies could have been withſtood, ſtill Ireland muſt have been reſtricted to her native produce, and the moſt innocent foreign luxuries muſt have been totally interdicted; nor to a candid and impartial obſerver would it appear that Ireland could attain any ſolid advantages by this *impoſſible* independance. Suppoſe an alliance formed with France, it muſt at leaſt for a long time have continued an alliance of dependence; and to thoſe who conſult the real buſineſs of ſtates, and not learned theories, which are very foreign from buſineſs, it muſt occur that this pretended alliance muſt ſoon have terminated either in the ſubjugation of Ireland by France, or a return to the connection with England, which would have been facilitated by an Engliſh party

which would naturally exiſt in great force, and be continually increaſed by thoſe who were malcontent at the French interpoſitions and uſurpations. The political importance and relations of Ireland are therefore intimately blended with thoſe of England; while the weſtern poſition of the former imparts ſingular advantages in the commerce with America and the Weſt Indies.

Political Importance, &c.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.—Language.—Literature.—Education.—Univerſities.—Cities and Towns.—Edifices.—Inland Navigation.—Manufactures and Commerce.

Manners and Customs.

SPENSER the poet, in his view of the ſtate of Ireland, has preſerved ſeveral curious particulars concerning the national manners in the reign of Elizabeth. As that work, though ſanctioned by an illuſtrious name, is little read, two ſpecimens ſhall be tranſcribed, one concerning what were then termed the Iriſh horſe-boys; and the other giving ſome account of the bards. After deſcribing the ſavage manners of the Gallow-glaſſes or infantry, and the Kernes or predatory cavalry, that venerable writer thus proceeds:

"And now next after the Iriſh kerns, methinks the Iriſh horſe-boys would come well in order; the uſe of which though neceſſity (as times now be) do enforce, yet in the thorough reformation of that realm they ſhould be cut off. For the cauſe why they are now to be permitted, is want of convenient inns for lodging of travellers on horſe-back, and of oſtlers to tend their horſes by the way. But when things ſhall be reduced to a better paſs, this needeth ſpecially to be reformed. For out of the frie of theſe rake-hell horſe boys, growing up in knavery and villany, are their kern continually ſupplied and maintained. For having been once brought up an idle horſe-boy, he will never after fall to labour, but is only made fit for the halter. And theſe alſo (the which is one foul overſight) are for the moſt part bred up amongſt the Engliſhmen; of whom learning to ſhoot in a piece, and being made acquainted with all the trades of the Engliſh, they are afterwards when they become kern, made more fit to cut their throats. Next to this there is another much like, but much more lewd

lewd and diſhoneſt, and that is of their Carrows, which is a kind of people that wander up and down to gentlemen's houſes, living only upon cards and dice; the which though they have little or nothing of their own, yet will they play for much money; which if they win, they waſte moſt lightly; and if they loſe they pay as ſlenderly, but make recompence with one ſtealth or another; whoſe only hurt is not that they themſelves are idle loſſels, but that through gaming they draw others to like lewdneſs and idleneſs. And to theſe may be added another ſort of like looſe fellows, which do paſs up and down amongſt gentlemen, by the name of jeſters, but are (indeed) notable rogues, and partakers not only of many ſtealths, by ſetting forth other men's goods to be ſtolen, but alſo privy to many traiterous practices, and common carriers of news."

After delineating the diſſolute life of an Iriſh chieftain, Spenſer thus introduces the Bards:

"In which if he ſhall find any to praiſe him, and to give him encouragement, as thoſe Bardes and Rithmers do, for little reward or a ſhare of a ſtolen cow; then waxeth he moſt inſolent, and half mad with the love of himſelf, and his own lewd deeds. And as for words to ſet forth ſuch lewdneſs it is not hard for them to give a goodly and painted ſhew thereunto, borrowed even from the praiſes which are proper to virtue itſelf. As of a moſt notorious thief and wicked outlaw, which had lived all his life time of ſpoils and robberies, one of their Bardes in his praiſe will ſay, that he was none of the idle milk-ſops that was brought up by the fire ſide, but that moſt of his days he ſpent in arms and valiant enterpriſes; that he did never eat his meat before he had won it with his ſword; that he lay not all night ſlugging in a cabin under his mantle, but uſed commonly to keep others waking, to defend their lives, and did light his candle at the flames of their houſes to lead him in the darkneſs; that the day was his night, and the night his day; that he loved not to be long wooing of wenches to yield to him, but where he came he took per force the ſpoil of other men's love, and left but lamentation to their lovers; that his muſic was not the harps, nor lays of love, but the cries of people, and claſhing of armour;

Manners and Customs.

armour; and finally that he died not bewailed of many, but made many wail when he died that dearly bought his death."

Spenſer, an excellent judge, then obſerves that he had cauſed ſeveral compoſitions of the bards to be tranſlated, "and ſurely they ſavoured of ſweet wit, and good invention, but ſkilled not of the goodly ornament of poetry; yet were they ſprinkled with ſome pretty flowers of their natural device, which gave good grace and comelineſs unto them; the which it is great pity to ſee ſo abuſed to the graceing of wickedneſs and vice, which with good uſage would ſerve to adorn and beautify virtue."

The manners of the ſuperior claſſes of people in Ireland now nearly approach to the Engliſh ſtandard, except that exceſs in wine, unfaſhionable in England, continues to prevail too much in the ſiſter iſland. The Iriſh gentry are alſo ſeldom addicted to literature or the arts; but amuſe themſelves with hunting and other robuſt exerciſes. Hence an overflow of health and ſpirits; and the obſervation of an able writer, that Ireland produces the ſtouteſt men, and the fineſt women in Europe, muſt not be confined to the inferior claſſes.

The common people of Ireland ſtill retain too many features of national manners. A funeral is joined by all the men and women of the vicinity, and is accompanied with dreadful howls, and other barbarous ceremonies. Their diet conſiſts chiefly of potatoes and buttermilk; and the rural cottage is a wretched hovel of mud. The favourite liquor is Uſquebagh, or the water of life; but more properly the water of death, being an ardent and pernicious diſtillation from corn. It is ſometimes rendered a liqueur by admixture with ſugar and ſaffron, or other plants which impart various colours. The children often run out, in a ſtate of nature, to gaze upon the paſſing ſtranger; and the dreſs of the parents is contrived for warmth not for ornament. In former times a remarkable feature of national dreſs was a puckered ſhirt, conſiſting of forty or fifty yards of linen, dyed with ſaffron, which was regarded as an effectual antidote againſt vermin. The manners of the country ſquires, and lower claſſes of Ireland, are ſo admirably depicted in a late novel entitled "Caſtle Rackrent," that the curious may

ſtudy

ſtudy them as in a moſt vivacious picture. The amuſements of the upper claſſes are ſimilar to thoſe of the ſame rank in England; but thoſe of the common people have many ſhades of diſcrimination, for inſtance a funeral is a grand ſource of joy and amuſement.* Manners and Customs.

The Engliſh language daily gains ground in Ireland, and might, if proper attention had been beſtowed on the national education, have become ere now the general idiom of the country. The ancient Iriſh is, as is well known, a dialect of the Celtic intermingled with many Gothic words, imported by the Belgic colonies, by the Scandinavians, and by the Engliſh. Ireland being the laſt retreat of the Celts, and of conſiderable population, the language may be ſuppoſed to preſent the moſt numerous and genuine ſpecimens of the Celtic denomination. The ancient lives of the ſaints have preſerved many Iriſh terms, as remote as the ſixth and following centuries; and fragments of pious tranſlation deſcend even to the tenth century. The moſt venerable remains are the annals of Tighernac, and other writers, of the eleventh and ſucceeding centuries; and it is unaccountable that theſe valuable records have not been laid before the public in their original tongue, accompanied with a Latin or Engliſh interpretation. The calligraphy of the Iriſh manuſcripts is ſo ſimilar in every age, that it becomes extremely difficult, even for the antiquary, to diſcriminate the preciſe century in which any one was written; but there do not ſeem to be ſufficient grounds to aſcribe any now extant to a more remote period than the twelfth or thirteenth century. Language.

The Lord's prayer in the Iriſh idiom runs in the following terms:

Ar nathair ata ar Neamh. Naomhthar Hainm. Tigeadh do Rioghachd. Deuntar do Thoil ar an Ttalámh mar do nithear ar Neamh. Ar naran la athcmhail tabhair dhuinn a niu. Agus maith dhúinn ar Bhfiacha mar mhaithmidne dar bhféitheamhnuibh fein. Agus na léig ſinn a cathughadh. Achd ſáor ſinn o Olc. Amen.

The literature of Ireland has a venerable claim to antiquity; for, as has been already mentioned, in the centuries immediately following the Literature.

* Mr. Young, ii. 229, obſerves that the Spaniards had a kind of ſettlement on the coaſt of Kerry; nor were they expelled till Cromwell's time. The Scotch in the north are ſtill a very diſtinct race.

introduction

Literature. introduction of Chriſtianity many writers aroſe, whoſe works were not indeed adapted to the popular taſte, as they conſiſt of lives of ſaints, and works of piety and diſcipline, but to the inquiſitive reader they preſent many ſingular features of the hiſtory of the human mind. Thoſe of the firſt deſcription are commonly remarkable for a ſuperabundance of miracles, which are but frugally diſtributed in the other European lives of ſaints. But the national manners, and the peculiar character of the times, are juſtly delineated, as in the fragments of a broken mirror. The chief glory of the ancient Iriſh literature ariſes from the repulſion of the rays of ſcience, after it had almoſt periſhed in Europe, on the fall of the Roman empire in the weſt. The Anglo Saxons, in particular, derived their firſt illumination from Ireland; and in Scotland literature continued to be the ſpecial province of the Iriſh clergy, till the thirteenth century.

A moſt ingenious and reſpectable writer of the laſt century[1] has publiſhed a ſmall volume, containing a chronological catalogue of Iriſh authors, from about the year 450, to his own time, containing about two hundred names; the tenth century, as uſual in European literature, being the moſt barren, whence it is ſtyled by literary men the dark century. The illuſtrious names of Uſher and Ware have been followed by a long train of eminent ſucceſſors; learning has ripened into genius, and all Europe acknowledges the ſuperior talents of a Burke and of a Sheridan. The late lamented Earl of Charlemont ſet a diſtinguiſhed example of the union of rank and literary fame, which it is hoped will be followed by other dignified perſons, to the excluſion of low or boiſterous relaxation. In ſome departments of ſcience Ireland begins to reſume her ancient prerogative of reflecting light to Britain; and the name of Kirwan ſtands almoſt alone in mineralogy, a branch highly important to the proſperity of nations, but unaccountably neglected in the land of tin.

Education. In no quarter of the Britiſh dominions, has education been conducted upon a more ſolid and rational plan than in Scotland: and no where has it been ſo much neglected as in Ireland. It is to be hoped that one

[1] Sir J. Ware Script. Hibern.

conſequence

consequence, and not the least important, of the Union, will be the introduction of parochial education into Ireland, a sure mean of preventing the ebullitions of ignorant discontent, arising often from erroneous views of human life and happiness, and from the weakness of uninformed fanaticism. Those who may justly distrust theory in any political question, may here find the evidence of facts; and may compare the turbulence of the Irish with the peaceable demeanour of the Scotch Highlanders, a congenerous people.* With four Archbishopricks Ireland only possesses one university, that of Dublin.[2] This institution was first projected by Archbishop Leech, about the year 1311; but death having interrupted his design, it was revived and executed by Bicknor his successor, and enjoyed moderate prosperity for about forty years, when the revenues failed. In the reign of Elizabeth the university was refounded by voluntary contribution, under the auspices of Sydney the Lord Deputy. In 1591 it was removed from the precincts of St. Patrick's church to the site of an Augustine monastery; and received a charter from Elizabeth under the style of Trinity College. The first James and Charles were liberal benefactors. It consists of a chancellor, vice-chancellor, provost, vice-provost, twenty-two fellows, and thirteen professors of various sciences. The number of students is commonly about four hundred, including seventy on the foundation. The building consists of two quadrangles; and it contains a library of some account, and a printing office. Adjacent is a park; and an observatory has been lately erected on the calcareous rock of Dunsurk, about four miles to the N. W.† Education. Universities.

At Kilkenny there is an endowed school, or what is called a college; but its institutes seem little adapted to the quiet of an academical life.[3]

The Dublin Society for the improvement of agriculture and manufactures was instituted by the efforts of the patriotic Dr. Samuel Madden in 1731, being the earliest of the kind now existing in Europe.[4]

* It may be mentioned, as the height of absurdity, that the few Irish schools refuse the children of popish parents. Campbell's Phil. Survey, 270.

[2] Gough's Camden, iii. 555.

† See an account of this observatory in the Transactions of the Royal Irish Academy, vol. i. p. 23.

[3] Camp. 111.

[4] Young, ii. 20.

Cities. Dublin.

Dublin, the capital city of Ireland, ſeems to be the Eblana of Ptolemy; but continued little known till the tenth century, when it was mentioned in the Saxon chronicle; and in the beginning of the next century, we have coins of Canute ſtruck at Dublin. The ſituation is delightful, in a bottom, between ranges of hills on the ſouth and north. It is pervaded by the river Liffy, and by ſome rivulets. The inhabitants have been eſtimated at 150,000; this capital being juſtly accounted the ſecond in the Britiſh dominions, and the fifth in the ſcale of European cities.[5]

The circumference of Dublin may be about ten miles, being about two miles and a quarter in length, and as much in breadth. The harbour is incommodious, being impeded with two banks of ſand, called the north and ſouth bulls, which prevent ſhips of large burden from paſſing the bar; but ſome improvements have been made, and others might be carried into execution. A mole has been conſtructed four miles in length; and the quays are ſpacious and beautiful. There are ſix bridges, the chief of which is that called Eſſex. The houſes were anciently conſtructed of wattles daubed with clay. In Elizabeth's time they uſed timber in the Flemiſh faſhion; and brick and ſtone were ſeldom introduced till the laſt century. The caſtle was founded about the year 1205, and continues, though in great part rebuilt, to be the ſanctuary of the public records, as it formerly was the reſidence of the viceroy. The parliament houſe is a ſuperb building, erected at conſiderable expence. The church of St. Patrick is the cathedral, a venerable building, which was begun in the end of the twelfth century; but the ſteeple, the higheſt in the city, was not erected till the year 1370. The other churches are eighteen in number, ſeveral of which are elegant modern erections. The Royal Exchange was compleated in 1779; and among other beautiful edifices muſt not be omitted that whirlpool of expenditure the Cuſtom Houſe; and the houſes of the Duke of Leinſter, the Earl of Charlemont, and others.

Dublin has an ample ſupply of native proviſions; but coals are imported from Scotland and Cumberland.

[5] Gough's Camden, iii. 5, 4. 558.

The

The environs of Dublin preſent many pleaſant views, and remarkable objects. St. Stephen's Green is an Engliſh mile in circumference, laid out in walks, and planted with trees, in 1670, with an equeſtrian ſtatue of George II by Van Noſt in the centre. The Phœnix park is the Hyde park of Dublin, but barren of trees. Many ſeats of the nobility and gentry decorate the vicinity of Dublin. The hill of Howth is a peninſular promontory, which forms the north-eaſt ſide of the bay of Dublin; and about three quarters of a mile to the north is Ireland's eye, a ſmall rocky iſle. Lambey is a larger iſland near the ſhore, full of rabbits, and ſanctified by a holy well. Dalkey is a romantic village at the northern baſe of a mountain, ſix miles and a half from Dublin: but one of the moſt pleaſant places in the vicinity, is Leixlip, where there is a ſulphureous ſpring, much viſited in the ſummer ſeaſon, and a noted ſalmon-leap, ſo called from theſe fiſh darting up the cataract. Swords, ſix miles to the north, preſents a very complete round tower, ſeventy-three feet in height; and about a mile beyond Kilternen is a remarkable chaſm, called the Scalp, in the ridge of a mountain, appearing as if that part had been undermined, and had fallen in. Cities.

In proceeding to give a brief account of the principal towns and cities of Ireland, Cork and Limerick attract the firſt attention. Cork is a city of conſiderable importance, ſituated on the ſouth-eaſt ſide of the iſland, and ſuppoſed to contain about 70,000 inhabitants. The haven ranks among the moſt capacious and ſafe in Europe; and the exportation, the largeſt in the ſiſter kingdom, conſiſts chiefly of beef, hides, tallow, and butter. It is the grand market of Iriſh proviſions; and it was computed that not leſs than a hundred thouſand cattle were here annually killed and ſalted, between the months of Auguſt and January.[6] This city lies chiefly in a marſhy iſland, ſurrounded by the river Lee; but the marſhes on the oppoſite ſide of the river having been drained, ample ſpace has been given to the recent improvements.* Cork.

[6] Gough's Camden, iii. 504.

* Mr. Young, vol. i. 417, expreſſes his aſtoniſhment at the populouſneſs of Cork. The duties of the harbour were, in 1751, 62,000l.; in 1779, 140,000l.

Cities. Limerick.

Limerick unites the fortunate ſituation of being almoſt central to the ſouth of Ireland, with an excellent haven, formed by the long eſtuary of the river Shannon. The city is accounted the third in Ireland, and was formerly fortified with great care. The epiſcopal ſee is ſaid to have been founded in the year 652. The Danes held the city from the ninth century to the eleventh. There are three bridges over the river, one of which conſiſts of fourteen arches. The number of inhabitants has been computed at 50,000. The chief exports are beef and other proviſions.[7]

The other chief towns in Ireland ſhall be briefly mentioned, in a geographical progreſs from the ſouth towards the north.

Galway.

Galway is a town of conſiderable note, and carries on an extenſive trade with the Weſt Indies. The port is commodious and ſafe, but diſtant from the city, which can only be reached by veſſels of ſmall burden: the number of inhabitants is computed at 12,000. Greater trade is now carried on in the bay of Sligo than at Galway.[8]

Newport.

On Klew bay, in the centre of the weſt of Ireland, ſtands Newport; but by ſome fatality the advantages of the county of Mayo, have not been improved, nor are there any towns of much conſequence upon the whole weſtern coaſt.

Sligo.

Sligo is, however, increaſing in trade, and the inhabitants are computed at 8000: and Caſtlebar is alſo a proſperous town.[9]

Londonderry.

Londonderry is more remarkable for its ancient and military fame than for its preſent commerce, though not unimportant. It ſtands on the river Foyle, over which a wooden bridge of ſingular conſtruction, one thouſand and ſixty-eight feet in length, was thrown in 1791.

Belfaſt.

Belfaſt on the North-eaſt is in the centre of the linen manufactures, and may almoſt be regarded as a Scotiſh colony. The inhabitants are computed at 18,000. The chief manufactures, cotton, cambric, ſail-cloth, linen, with glaſs, ſugar, and earthenware. It maintains conſiderable intercourſe with the commercial city of Glaſgow; and the grand exports are to the Weſt Indies.

Dundalk.

Dundalk has alſo its manufactures of linen and muſlin. Drogheda imports ſea-coal and goods from England, and exports conſiderable

[7] Gough's Camden, iii. 517. [8] Beauf. 9. [9] Beauf. 72. Young, i. 291.

quantities of grain. It is a well built town on the Boyne: the inhabitants are computed at 10,000. Cities.

Towards the South-eaſt, Wexford claims the firſt notice, being remarkable for its woollen manufactures; but the haven, though ſpacious, is not ſufficiently deep for large veſſels. The inhabitants are 9000. Wexford.

Waterford is a city of conſiderable importance, ſituated on the river Suir,* and is ſuppoſed to have been founded by the Danes. It ſuffered greatly in the late diſorders; and the inhabitants cannot now be ſuppoſed to exceed 30,000. The chief exports are beef, pork, &c. and linen. Packet-boats ſail regularly betwixt Waterford and Milford Haven. Waterford.

The ſea-ports of Dungarvon and Youghall are loſt in the ſuperior conſequence of Cork; but Kinſale is a maritime arſenal, and is ſuppoſed to contain 8000 ſouls.

The chief towns in the interior, Armagh, Tuam, Caſhel, &c. &c. are rather venerable from their eccleſiaſtic antiquity, than important in themſelves. Kilkenny is however an exception; a handſome town, with 16,000 inhabitants.

Many of the chief edifices of Ireland have been already mentioned in the deſcription of Dublin. The cathedrals ſeldom aſpire to great praiſe of architecture; and the villas of the nobility generally yield in ſplendour to thoſe of England, and even of Scotland. Among the principal villas may be mentioned Caſtletown, not far from Dublin on the ſouth, eſteemed one of the moſt elegant houſes in Ireland; Slane caſtle on the Boyne, the ſeat of Lord Conyngham; Mount Juliet on the river Nore, and Woodſtock in the ſame vicinity; Mount Kennedy the ſeat of General Cunningham; Shaen caſtle on Lough Neagh; Caſtle Caldwall on Lough Earn, and Belleiſle on the ſame lake; Florence Court, the ſeat of Lord Inneſkillen; Weſtport, Lord Altamont's; Woodlawn in Galway, Lord Doneraile's; Caſtle Martyr, a ſeat of the Earl of Edifices.

* —— That gentle Swire, that making way
By ſweet Clonmel, adorns rich Waterford.
SPENSER.

Shannon;

Edifices. Shannon; Roſtellen near Cork; Dundrum, the ſeat of Lord Montalt; Curraghmoor not far from Waterford; with many others too numerous to be here inſerted.*

Though the turnpike roads in Ireland be rather neglected, yet the croſs roads are admirable; and Mr. Young has explained at length the principles upon which they are conducted.[10]

Inland Navigation. The advantages derived by England from inland navigation ſoon attracted the attention of Ireland: and not many years after the example ſet by the Duke of Bridgewater, a grand canal was begun from the city of Dublin to the river Shannon, and was actually carried on to the bog of Allen, at the expence of 77,000l.[11] But the engineer's want of ability occaſioned great errors in the original plan and ſurvey; and the work was interrupted in 1770. Nor, unhappily, have proper means been adopted to execute the plan, which remains imperfect, after an expenditure of half a million; and an able writer informs us that even the deſign was abſurd, as the country through which the canal paſſes is one of the leaſt productive for the Dublin market.[12]

But a canal is completed from the town of Newry to the ſea, which was however intended to have paſſed that town towards the Collieries of Drumglaſs and Dungannon. This attempt, however, to ſupply Dublin with Iriſh coals has hitherto been only ſucceſsful in part, though the beds of coal are ſaid to be very abundant.

The parliament of Ireland has alſo granted conſiderable ſums for the canals of Lagan, Dromreagh, Blackwater, and for improving the navigation of the rivers Shannon, Barrow, and Lee. But in the firſt place, the avaricious and jobbing ſpirit of the perſons employed; and latterly, the diſtracted ſtate of the country, have hitherto impeded theſe noble intentions.

Manufactures and Commerce. Though we find, as has been already mentioned, that Ireland was diſtinguiſhed at an early period for her manufacture of woollen ſtuffs,†

* Mr. Young, ii. 349, obſerves that the buildings in Ireland have been almoſt wholly renewed ſince 1760 in cities, towns, and country-ſeats: and the improvements were proceeding with great rapidity till the late unfortunate commotions.

[10] Vol. ii. 151. [11] Phillips, 330. [12] Young's Tour in Ireland.

† See a diſſertation by the Earl of Charlemont, T. R. A. vol. i.

yet

MANUFACTURES AND COMMERCE.

yet the ſpirit of induſtry made little progreſs, and the chief Iriſh manufactures are of recent inſtitution. But the linen manufacture was not unknown in Ireland in more early times, as appears from acts of parliament in the reigns of Henry VIII, and Elizabeth. In that of William III it became an object of conſequence; and in 1699 ſuch high duties were impoſed upon Iriſh woollens, that the manufacture was nearly abandoned, and the efforts of induſtry directed to the linen trade. The annual produce of the linen manufacture is computed at about 3,000,000l. ſterling.[13]

But a grand portion of the commerce of Ireland ariſes from her abundant ſtores of black cattle, the moiſture of the climate rendering the paſturage remarkably luxuriant.

In 1780 Mr. Young computed the average imports of Ireland at 1,240,677; and the exports at 2,012,202l. Yet he afterwards calculates the exports at about three millions and a half; and the balance of trade in her favour at above 1,000,000.*

[13] Young, ii. 283. 301.

* Tour in Ireland, ii. 333. 352. Dr. Beaufort in his Memoir, p. 145, ſays that on an average of ſeven years, to 1791, Ireland exported to the amount of 4,357,000l.

CHAPTER IV.

Natural Geography.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

Climate and Seasons.

IRELAND lying nearly in the ſame parallel with England, the difference of climate cannot be ſuppoſed to be very important. The mean temperature of the North is about 48; of the middle 50; of the South 52 of Farenheit.[1] In the ſixth volume of the tranſactions of the Royal Iriſh Academy may be ſeen a curious Memoir on the climate of Ireland, by the Rev. William Hamilton, in which the ingenious author attempts to account for a conſiderable change in the ſeaſons, which has happened almoſt within the memory of the preſent generation, particularly the mildneſs of the winters, while the ſummers are leſs warm and genial. He ſuppoſes that the weſtern winds are more violent, whence many kinds of trees cannot proſper, and even the aſh threatens a ſpeedy annihilation. He obſerves the progreſs which the ſands have made, particularly at the entrance of the river Bannow, in the county of Wexford, where the town of Bannow, formerly ſo conſiderable as to ſend members to Parliament, has been overwhelmed; as has a gentleman's reſidence in the county of Donnegal. The tides have alſo aſſumed more power and violence. From all theſe circumſtances, Mr. Hamilton ſhews the ſuperior power of the weſtern gales, and the conſequent production of a humid and ungenial climate. He ſuppoſes that the prevalence of the Weſtern winds is chiefly owing to the eradication of foreſts in Europe, Aſia, and America.

Face of the Country.

In conſidering the face of the country it muſt be remembered that Ireland forms a ſtriking contraſt to Scotland, being moſtly level, fertile,

[1] Tranſ. R. I. A. vol. ii.

and

and abundant in paſturage. The chains of hills, for they can hardly aſpire to the name of mountains, are few and unimportant. Face of the Country.

The ſoil and agriculture of Ireland are topics which have been ably illuſtrated by an intelligent writer.[2] He obſerves that the quantity of the cultivated land exceeds in proportion that of England. The moſt ſtriking feature is the rocky nature of the ſoil, ſtones generally appearing on the ſurface, yet without any injury to the fertility; whence the ſoil may be defined a ſtony clay, a ſtony loam, a gravelly ſand, &c. The ſtones are generally calcareous, and appear at no great depth, even in the moſt flat and fertile parts, as Limerick, Tipperary, and Meath. The climate being more moiſt than that of England, the verdure never appears parched with heat.* Tillage is little underſtood, even in the beſt corn counties, as Lowth, Kildare, Carlow, and Kilkenny, turnips and clover being almoſt unknown: the wheat ſown upon fallow, and followed by ſeveral crops of ſpring corn. The farmers are oppreſſed by the ſhocking ſyſtem of *middle men*, who rent farms from the landlords, and let them to the real occupiers; who, as well as the proprietors, ſuffer greatly by this ſtrange practice. Even under theſe abuſes Ireland is a moſt fertile country; and if agriculture were duly improved, might be a granary of grain. Even the bogs, among which that of Allen extends eighty miles, and is computed to contain 300,000 acres, might generally be drained, and converted into fertile meadows. Limeſtone gravel is a manure peculiar to Ireland; having on uncultivated land the ſame wonderful effect as lime, and on all ſoils it is beneficial.[3] Soil and Agriculture.

Among the chief rivers of Ireland muſt firſt be mentioned the Shannon, which riſes from the lake of Allen, and paſſing through two other large lakes, Lough Ree, and Lough Derg, afterwards extends below Limerick into a vaſt eſtuary or firth, about ſixty miles in length, and from three to ten in breadth.[4] This noble river is, almoſt through its whole courſe, ſo wide and deep as to afford eaſy navigation. Boate informs us that the celebrated Earl of Strafford deſigned to remove a rock, ſix miles above Limerick, which forming a cataract impedes the Rivers. Shannon.

[2] Young's Tour, ii. 72.

* The Curragh of Kildare is a moſt beautiful lawn, of above 4000 Engliſh acres, a ſheep-walk of the ſofteſt turf, and moſt delicious verdure. Young, ii. 7.

[3] Ib. 171. [4] Boate, p. 36.

Rivers. intercourſe between the upper and lower parts. The whole courſe of the Shannon may be computed at 170 miles.

The other rivers of Ireland have little of this majeſtic character.

Barrow. The river Barrow riſes about forty miles to the weſt of Dublin, near the ſource of the Boyne; and after a courſe of about one hundred miles enters the ſea on the South-eaſt, having received the rivers Nour, and Suir, and formed the harbour of Waterford.

Blackwater. The Blackwater, another conſiderable ſtream in the South, enters the ſea at Youghall Bay.

The Slaney forms the harbour of Wexford.

The Liffy is an inconſiderable ſtream, ennobled by the capital.

The Boyne, after a courſe of about fifty miles, alſo enters the eaſtern ſea: the other rivers on the eaſt are ſmall and unimportant.

Banna. In the north the Banna is a conſiderable ſtream, which pervades Lough Neagh, and enters the ſea after a courſe of about ſeventy miles. By the canal of Newry it communicates with Carlingford bay; and thus inſulates the North-eaſt projection of Ireland.

Foyl. The river Foyl paſſes by Londonderry, and has a conſiderable eſtuary called Lough Foyl. The Swilley is of inconſiderable length, but forms a long eſtuary.

On the N. W. Lough Earn iſſues into Donnegal bay by a conſiderable ſtream; but no other river of conſequence occurs till we reach the eſtuary of the Shannon; nor are the rivers on the S. W. of much note.

Lakes. The lakes of Ireland are numerous, and ſome of them extenſive. The term *Lough*, correſponding with the Scotiſh *Loch*, is ſometimes applied to an eſtuary, or to an inlet of the ſea, ſuch as the Swilley, the Foyl, that of Strangford in Down, &c. The chief lake of freſh

Earn. water is that of Earn, which exceeds thirty Britiſh miles in length, and twelve in its greateſt breadth; it is divided by a narrow outlet, from the ſouthern part into the northern, of about four miles in length.

Neagh. Next in magnitude is Neagh, about twenty-two miles in length, and twelve in breadth. Both theſe lakes are ſtudded with ſmall iſlands; and the latter is ſaid to poſſeſs a petrifying quality. It ſeems however rather to belong to the adjacent ſoil.[5]

5 Smyth in Boate, p. 121.

The

The lake of Corrib, in the county of Galway, is about twenty miles in length, and from two to five wide. Thoſe of Ree and Derg are leſs conſiderable in ſize: and there is a ſmaller lake alſo named Derg in the N. W., which was remarkable in ſuperſtitious times for a little iſland, containing what was called the purgatory of St. Patrick.[6] LAKES. Corrib.

Among the lakes of the ſecond magnitude, muſt be firſt named the beautiful and intereſting Lough of Killarney in the S. W., abounding with romantic views, and fringed with the arbutus no where elſe a native of the Britiſh dominions. This is almoſt the only lake in the ſouth of Ireland; and the obſervation may be extended to the eaſt. On the N. W. are the lakes of Eaſk, Trierty, Melve, Macnean, and Gill. That of Allen, as already mentioned, is a chief ſource of the Shannon, into which the Gara and Key alſo pour their waters. Further to the weſt are two conſiderable lakes, the Conn and the Maſk; nor muſt thoſe of Corrafin be forgotten. Lough of Killarney.

The mountainous chains in Ireland are neither numerous nor important; but an upland ridge divides the country from the N. E. to the S. W., giving birth to ſeveral of the rivers. The Iriſh hills generally form ſhort lines, or detached groupes. One groupe of conſiderable height appears on the weſt and ſouth of Lough Lane, or what is called the lake of Killarney: of theſe Mangerton is 2500 feet above the ſea.* A ſmall Mountains.

[6] Ware, p. 219, ed. 1658.

* Mr. Young, i. 458, ſays Mangerton is 835 yards (2505 feet) above the level of the ſea. From an intelligent correſpondent in Ireland the following note has been received, concerning the height of the chief Iriſh mountains.

Slieve Donard, Co. Down.	3150 feet—is ſaid to have been meaſured by the barometer,—probably not ſo high.
Mangerton, Co. Kerry.	2500 above the level of the lake of Killarney, not above the ſea as Beaufort aſſerts, p. 91.—taken geometrically by Taylor.
Croagh Patrick, Co. Mayo.	2666 above the ſea, taken barometrically by (it is believed) Mr. Kirwan.
Nephin, ſame Co.	2640 above the ſea, by the ſame.
Cumeragh, Co. Waterford.	2160 by barometer, taken by Smith, p. 207.
Knock Meledown, Co. Waterford, N. of Liſmore.	2700, Smith's Waterford, p. 210, which explains the principles adopted in his menſuration.

Mountains. line of hills extends on the north-weſt of Bantry Bay, and paſſes to the eaſt, under the name of the Shelly mountains[7]. To the north of this is the line of Sliblogher and Nagles: followed by the Galtee mountains; and towards the eaſt are thoſe of Knockendown, which bend ſouthward towards the bay of Dungarvon. A ſmall chain alſo appears to the ſouth of Tralee, which with a groupe to the N. E. may be ſaid to complete the enumeration of the mountains of Munſter.

In Leinſter is a mountain ſo called, the line of Slieb-loom on the S.W., and a conſiderable groupe to the ſouth of Dublin, ſtyled the Kippure mountains, or thoſe of Wicklow. The extent of this groupe is about thirty Engliſh miles in length, by about twelve in breadth.

In Ulſter is a ſmall groupe, called the mountains of Mourne, in the S. E. corner of the province: one of them, Donard, is ſaid to be about the height of Mangerton. The hills of Slievecroob (in the Iriſh language *ſliebh* ſignifies a mountain,) form the centre of the county of Downe; and ſeveral hills are ſprinkled over the eaſtern half of Antrim. On the north-weſt of Loughnear are thoſe of Slievegallan, and Carntogher. Slieve Snaght is a conſiderable mountain N. W. of Loughfoyl, whence other lines and groupes extend down to Loughern.

The eaſtern part of Connaught preſents numerous marſhes; but few mountains except thoſe of Baughta on the ſouth. The extreme weſtern peninſula is one of the moſt mountainous regions in Ireland. Among other names may be mentioned mount Nephin in the county of Mayo, a ſolitary hill of 2640 feet, and one of the moſt conſiderable in the iſland. That of Croagh Patrick on the S. E. of Clewbay, a cone of 2666 feet; the Fernamoor mountains to the weſt of Loughmaſk; and the Twelve Pins, a line of ſo many ſmall peaks in Ballinahinch; with others to the ſouth of Loughcorrib.

Forests. Scarcely the ſemblance of a foreſt remains in Ireland; and Boate has long ſince obſerved that the woods have been greatly diminiſhed ſince the entrance of the Engliſh, partly from the extenſion of tillage, and partly from the neceſſity of opening up the receſſes of banditti.[8] Another great cauſe was the conſumption in domeſtic fuel, and in the iron

[7] Beaufort's Memoir of a map of Ireland. [8] p. 67.

manu-

manufactures, the coal mines not having been explored. Yet Boate informs us that conſiderable woods exiſted in his time in Wicklow, Wexford, and Carlow; Kerry, Tipperary, and Cork. The province of Ulſter alſo boaſted of extenſive foreſts, in the counties of Donnegal, Tyrone, Fermanagh, and Antrim. The weſtern province of Connaught, being the moſt remote from the new colony, was in his time ſtored with trees; but the moſt noted foreſts were in the counties of Mayo and Sligo. FORESTS.

The place of the foreſts was unhappily uſurped by the moors or bogs, which form a remarkable feature of the country. Boate divides them into ſeveral genera and ſpecies, forming an elaborate ſcale of ſterility. The dry heaths are chiefly confined to the mountains. The bogs he ſubdivides into four deſcriptions: 1. The graſſy, in which the water being concealed by herbage, they become extremely perilous to travellers: ſome of theſe are dry in the ſummer. 2. The pools of water and mire. 3. What he terms haſſocky bogs, or ſhallow lakes ſtudded with tufts of ruſhes, which are chiefly found in the province of Leinſter, eſpecially in King's and Queen's counties. 4. The peat moors. In the Tranſactions of the Royal Iriſh Academy,[9] there is a curious account of the formation of a bog, by the motion of a peat moor after a heavy rain: the peat moor at the ſame time, by obſtructing the courſe of a ſtream, formed a conſiderable lake, in the ſpace of half a day. But this event was rather of a local nature; and the formation of bogs ſeems to be owing, in many inſtances, to the moiſture retained in thoſe parts of foreſts which chance to form hollow receptacles, the fall of the leaves forming a vegetable earth, ſuperſaturated with moiſture, ſo that the trees themſelves in time fell a prey. Ornaments of gold and other relics of antiquity, have from time to time been diſcovered in the bogs at great depths; and there are other indications that they are of comparatively recent formation. It is hoped that the hand of induſtry will in time remove many of theſe blemiſhes; and one of the greateſt improvements of modern agriculture is that of reclaiming peat moors, by means of calcareous manure. Mr. Young only divides the bogs into two ſorts, the black and the red; Moors or Bogs.

[9] Vol. ii. p. 3.

Moors or Bogs. the former being ſolid almoſt to the ſurface, and generally improveable, though at great expence. The red is ſo called from a reddiſh ſubſtance, five or ſix feet deep, which holds water like a ſponge, yields no aſhes in burning, and is ſuppoſed to be utterly irreclaimable. Trees are found in both, and they are ſuppoſed to originate from fallen foreſts. Both differ from the Engliſh moraſſes; the Iriſh being rarely level, but riſing into hills; and there is a bog in Donnegal, that is a perfect ſcenery of hill and dale. The plants are heath, with ſome bog myrtle, and a little ſedgy graſs.[10]

Botany. The ſtudy of Botany has been leſs cultivated here than in any other part of the united Empire; and the neighbourhood of Dublin, which has been beſt explored, affords no rare, and few characteriſtic plants. From the general mildneſs of the climate, the extenſive tracts of bog, and the vaſt mountainous ranges that interſect the country, and afford capacious baſons for its numerous lakes, it is obvious that the Flora of Ireland, when complete, will probably contain ſeveral ſpecies that are ſtrangers to the reſt of the Britiſh iſlands. On the mountains of Sligo is found the Saxifraga umbroſa, (known in our gardens by the name of *London-pride*,) and the romantic ſcenery of Killarney in the county of Kerry is the moſt Northern *habitat* of the Arbutus Unedo: the heaths abound with the ſtately Erica Daböeci, and the Dryas octopetala, Arbutus uva-urſi, with other alpine plants already noticed in the botany of Scotland, expand their neglected bloſſoms, and trail their glowing feſtoons of cluſtered berries, unnoticed amidſt the wide ſolitude of their rocky faſtneſſes.

Zoology. In paſſing to the Zoology of Ireland, it may be expected that not many varieties ſhould be found between the Iriſh animals and thoſe of England. It is aſſerted that no poiſonous animal will live in Ireland; and even that no ſpiders will haunt Iriſh timber, which, as is ſaid, was the cauſe why it was often employed in magnificent ceilings in the middle ages. As in fact England affords no poiſonous animal, except the viper, this poſition implies, in other words, that no vipers are found in Ireland.

[10] Vol. ii. 177.

The

The Iriſh horſes, called hobbys, are of a ſmall breed, remarkable for the gentleneſs of their pace. Zoology.

The Iriſh hound is one of the nobleſt animals of the claſs, and formerly celebrated for his ſize and vigour, but the breed is now almoſt extinct.

Bede has commemorated the praiſe of Ireland for abundance of honey, and of milk, ſo that the country ſeems even in early times to have abounded in cattle. He alſo mentions the numerous herds of deer, which animal the progreſs of cultivation has now rendered rare. In various parts of Ireland are dug up enormous horns of deer, which ſome writers have imagined were of the ſpecies called Mooſe deer in America; but Mr. Pennant has demonſtrated that the animal muſt have almoſt doubled in ſize the American monſter, which is ſometimes found ſeventeen hands in height.[11] The Iriſh horns have been found of the extent of fourteen feet from tip to tip, furniſhed with brow antlers, and weighing three hundred pounds; the whole ſkeleton is frequently found with them. It is ſuppoſed that the animal muſt have been about twelve feet high.

The mineralogy of Ireland has been recently ennobled by the diſcovery of conſiderable maſſes of native gold, in the county of Wicklow, to the ſouth of Dublin. Theſe were found in a brook, running weſt to eaſt, to the river of Avonmore, where it is joined by the river Aghran; and on a declivity of the mountain called Croughan Kinſhelly, about ſeven Engliſh miles weſt of Arklow, and ſix ſouth-weſt of the noted copper mines of Cronbane.[12] It is ſaid that a jeweller who lately died in Dublin, often declared that gold from that ſpot had paſſed through his hands to the value of 30,000l., the ſecret being retained for many years, and ſome pieces weighing to the amount of 70 or 80 guineas. It is now worked for government, and it is ſaid that a very maſſy vein has been recently diſcovered, which it is hoped will greatly benefit the country; for mines have in all ages, ancient and modern, enriched and improved the countries where they were found, and the exception, if ſuch, of Spaniſh America is to be aſſigned to cauſes of a different nature. Mineralogy. Gold.

[11] A. Z. Vol. i. p. 23.

[12] Philoſ. Tranſ. 1797.

Gold

MINERALOGY.

Gold is alſo reported to have been anciently found in the province of Ulſter, in the ſand of a rivulet called Miola, which falls into the north-weſt corner of the lake called Neagh.'[13] As minute particles of gold are ſprinkled through moſt regions of the world, ſo in ſome inſtances a few may find opportunities to combine, by the law of aggregate attraction, and thus excite notice without any chymical procedure. But to infer from ſuch a diſcovery that conſiderable quantities of this precious metal muſt be found in the mountains, whence the ſtreams have chanced to convey golden ſand, or even ſmall fragments, might only lead to raſh and ſpeculative adventure; for even in the favourite regions of native gold, it has ſometimes been found that a river or rivulet had actually carried down what little gold originally exiſted in the mountain. Another conſideration remains well known in Peru and Hungary, namely, whether more gold may not be expended than procured, in working a mine, if virtually diſcovered.

Silver.

The ſilver found in the Iriſh mines deſerves more attention. Boate mentions a mine of this metal, intermingled with lead, which was wrought in the county of Antrim, and yielded a pound of pure ſilver from thirty pounds of lead. Another, leſs productive of ſilver, was found near the harbour of Slago in Connaught; and a third in the county of Tipperary, twelve miles from Limerick. The ores of this laſt were of two kinds, moſt generally of a reddiſh colour, hard and gliſtering; the other, which was the richeſt in ſilver, reſembled a blue marl. The works were deſtroyed in the Iriſh inſurrections under Charles I.

Copper.

Copper has been recently found in the county of Wicklow, and at Muccroſs in Kerry.

Iron.

One of the chief mineral productions of Ireland is iron, the mines of which were little known till the time of Elizabeth. Boate divides the iron mines of Ireland into three deſcriptions: 1. What he ſtyles the bog mine, or what is now termed lowland ore, found in moors and bogs: the ore reſembling a yellow clay, but mouldering into a blackiſh ſand. 2. The rock mine, a bad ſort, the ore intimately combined with ſtone. 3. That found in various mountains, the ore

[13] Boate, p. 69.

ſpheric,

ſpheric, and of a whitiſh grey colour: balls of the beſt ore contained kernels full of ſmall holes, whence the name honey-comb ore. Boate praiſes this iron as frequently rivalling that of Spain; and his work may be conſulted for the manner of conducting the founderies. NATURAL CURIOSITIES.

The beds of coal to be ſeen in various regions of Ireland have not yet been explored to their proper extent. That of Kilkenny, found at Caſtlecomer, is deſervedly celebrated among mineralogiſts, as the pureſt which has yet been traced in any quarter of the globe. Even as early as the time of Boate, coal was accidentally diſcovered in an iron mine, in the county of Carlow. Coal.

One of the moſt beautiful marbles of Ireland is found near Kilkenny; and others have been diſcovered in various parts of the iſland. Boate brands the freeſtone of Ireland as being liable to imbibe the moiſture of the atmoſphere; to prevent which effect it was neceſſary to incruſt the walls with brick, or to line them with wainſcoat. Slate of various kinds is alſo abundant.

For mineral waters Ireland has never been famous. There is a ſpring, as already mentioned, at Leixlip, more celebrated from faſhion than from potency. As Ireland contains abundance of iron, it is almoſt unneceſſary to add that there are many chalybeate waters in ſeveral parts of the country. The moſt remarkable are that of Ballynichinch in the dioceſe of Dromore; Ballyſpellan, not far from Kilkenny; and Kanturk and Mallow, in the county of Cork: the laſt a tepid ſpring. There is another Spa at Farnham, near Lough Earn. Mineral Waters.

Among the natural curioſities of Ireland would, in ancient times, have been mentioned the purgatory of St. Patrick, a miſerable monkiſh deluſion. At preſent the lake of Killarney attracts more deſerved devotion. This picturesque expanſe of water is about ten miles in length, and from one to ſeven in breadth: it is divided into three parts, called the upper, lower, and Muckruſs lake; and is ſurrounded by an amphitheatre of mountains, clothed with trees, whoſe verdure is contraſted with intervening rocks. The Arbutus, with its ſcarlet fruit and ſnowy bloſſoms, here vegetates in great luxuriance. Nor are caſcades, and other features of rural beauty, wanting to complete the ſcene[14]. The Natural Curioſities.

[14] Young, i. 444, &c.

Natural Curiosities.

iſle of Innisfallen is not only romantic, but of venerable fame for the annals there written.

The petrifying power of Lough-neagh has been found, as already mentioned, rather to reſide in the circumjacent ſoil[15]. The petrifications ſeem to be chiefly of oak; and the ſtump of a tree with the roots has been found wholly petrified; but from the account given by Mr. Smith the petrification ſeems to be ſlight.

What is called the Giant's Cauſeway muſt be diſtinguiſhed among the moſt remarkable of the curioſities of Ireland. When we recollect that a ſimilar production, the celebrated iſland of Staffa, remained unnoticed till within theſe thirty years, we ſhall be the leſs inclined to wonder that the Giant's Cauſeway is an object of recent obſervation, and has eſcaped the notice of Giraldus Cambrenſis, Stanyhurſt, and even of the accurate and ingenious Ware: the firſt account is that given by Sir R. Buckley in a letter to Doctor Liſter 1693. This ſurprizing collection of baſaltic pillars is about eight miles N. E. from Coleraine[16]. The adjacent coaſt is verdant but precipitous; and from it the Cauſeway projects into the ſea, to an unknown extent. The part explored is about 600 feet in length; the breadth from 240 to 120; the height from 16 to 36 feet above the level of the ſtrand. It conſiſts of many thouſand pillars, moſtly in a vertical poſition, ſome of them high; others broken, and, for a conſiderable ſpace, of an equal height, ſo as to form a pavement. They are cloſely compacted together; though the form be various, trigonal, tetragonal, pentagonal, hexagonal, and heptagonal; the moſt numerous are the pentagonal. The pillars are rarely compoſed of one entire piece, but moſtly conſiſt of ſhort or long joints, either plane, or concave correſponding with convex. The pillars are from 15 to 24 inches, or more, in diameter. The adjacent ſhore is moſtly the common crag; but there are a few irregular pillars on the eaſt; and towards the N. E. what is called the organ, in the ſide of a hill, conſiſting of fifty pillars; that in the middle 40 feet high, the others gradually diminiſhing. Similar pillars are alſo found a mile and a half inland, four miles to the weſt of the Giant's Cauſeway.

[15] Boate p. 122. [16] Ibid. 150.

The

NATURAL CURIOSITIES.

The learned Dr. Pococke examined this remarkable object with great care, and gave an account of it in the Philoſophical Tranſactions. Mr. Hamilton has recently inveſtigated the northern coaſt of Antrim with ſcientific ſkill; and ſome particulars ſhall be extracted from his account. The grand features of this coaſt are the capes of Bengore and Fairhead, precipitous promontories diſtant about 8 miles. Bengore is compoſed of ſeveral ſmaller capes and bays; and contains a vaſt quantity of columnar baſalt. The cape called Pleſkin preſents a magnificent gallery, or colonnade, about 60 feet high, with a lower gallery about 50. The lower ranges contain the moſt ſharp and exact columns. The promontory of Fairhead offers pillars of greater length, and coarſer texture: and ſimilar ſtones are found in the mountain of Dunnel, between Coleraine and the river Buſh; in the ſmall iſle of Raghry, two miles N. of Fairhead; and in various other circumjacent quarters, along a coaſt of fifty miles in length, by two in breadth. Nay imperfect appearances of the ſame kind may be traced even to the lake of Neagh, and mountains of Derry; ſo that the effects have operated to a ſpace of more than 40 miles in length, and 20 in breadth, that is above 800 ſquare miles. Mr. Hamilton might have added that even the iſland of Staffa, at the diſtance of 100 miles, ſeems to form part of the ſame ſeries, which may be carried to an unknown extent, through the bed of the intervening ſea. The baſalt of the Giant's Cauſeway is of a very compact texture, and the angles of the pillars have preſerved their ſharpneſs, though expoſed to the ſea, for perhaps two or three thouſand years[17]. The origin of this ſubſtance is matter of intenſe diſpute between the Vulcaniſts and Neptuniſts; but ſuch geological diſcuſſions are foreign to the nature of this work. Suffice it to obſerve that baſalt contains a mixture of ſilicious and argillaceous earth, together with iron to the amount of one quarter; a proportion of that univerſal pervading mineral, which may well arrange baſalts under the claſs of iron; and it is remarkable that ſome hematites when broken preſent the ſame columnar appearance. Mr. Hamilton infers that the pillars of the Giant's Cauſeway are magnetic; and ſays, that in the ſemi-circular bays about Bengore the compaſs is much deranged. The ſame ſhore

[17] Kirwan Min. i. 232.

Natural Curiosities.

alſo preſents horizontal and bending pillars, like thoſe of Staffa; the attendant minerals are zeolite in the irregular baſalt, ſteatite, and bits of agate, red ochre, and iron ore. Mr. Hamilton, purſuing the Vulcanic theory, even adds pumice and pipereno; but theſe ſubſtances are rejected by Mr. Kirwan, who infers that the detection of clay, ſteatite, or zeolite, in baſalt, is a proof that it is not a volcanic ſubſtance.

Among the natural curioſities of Ireland muſt not be forgotten the Dargle, about 12 miles to the S. of Dublin, an enchanting glen, finely wooded with oak, and near a mile in length, with high precipices, and a pictureſque river, which Mr. Young deſcribes as a ſingular place, and different from any which he had ſeen in England [18]. In the neighbourhood of Mitchelſtown, at the foot of the Galtee mountains, is a cave in a limeſtone rock, the entrance of which is narrow; but from a vault, of about 100 feet long and 50 or 60 in height, there extends a winding courſe of not leſs than an Iriſh half mile, exhibiting great variety of appearances, ſometimes that of a vaulted cathedral, ſupported by maſſy columns with incruſtations of ſpar, nearly as brilliant as the Briſtol cryſtals. Mr. Young prefers this cave to that of the peak in Derbyſhire; and has alſo eſteemed it ſuperior to the Grau d'Aucel [19].

IRISH ISLES.

Irish Isles.

THE few, and ſmall iſles around Ireland are unimportant, but muſt not be wholly omitted. To the N. E. of Dublin is Lambey, a ſmall iſland already mentioned; and at the S. E. extremity of Ireland appear the rocks called Taſkard and the Saltee iſles. At the ſouthern extremity is the iſle of Clare, about three miles and a half in length, and more remarkable for its ſouthern promontory called Cape Clear, than for any other object. Turning to the N. W. are the iſle of Denſey, the Hog iſlands, and the Skelligs; to the north of the latter is Valentia off the

[18] Tour in Ireland i. 111. [19] Ib. ii. 61.

coaſt of Kerry, which is followed by the Blaſkets or Ferriter iſlands. The ſouth Arrin iſlands lie at the mouth of the noble bay of Galway, and are remarkable for a ſmall kind of oats without any huſk, and for large calves: the chief is near ſeven miles in length. A number of ſmall iſlands encircle the coaſt which projects furtheſt into the Atlantic, ſuch as Garonena, Littermore, Miniſh, Inconee, and further to the N. W. Dunloghan, Omey, and Crua, &c. Boſin was famous in the days of monaſtic ſanctity, and has retained its ancient appellation. To the N. E. are the Iniſture, and another Clare at the mouth of Clew Bay; at the bottom of which is a numerous groupe of ſmall iſlands. To the north is Achill, the largeſt of the Iriſh iſles, being about 12 miles long by 10 broad. It is ſeparated from the coaſt of Mayo, by a narrow channel, but no minute deſcription of it has appeared. Iniſnuorry is a ſmall iſle at the mouth of the bay of Donnegal: and no other iſles worth mention appear, till we arrive at the northern iſlands of Arrin off the coaſt of Donnegal. The N. W. extremity of Ireland is marked by Tory iſle: and returning towards the eaſt we meet with Iniſtrahull: and after an equal diſtance Rachlin, the Ricina of Ptolemy, and memorable as the retreat of Robert I of Scotland.

IRISH ISLES.

FRANCE.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

Names. FRANCE, deſervedly celebrated amongſt the moſt eminent European ſtates, was probably known to the Phœnicians, though the ſuperior fame of the metallic riches of Spain have almoſt eclipſed their diſcovery of Gaul. In the year 600 before the birth of Chriſt; according to the chronology of Uſher, the Phocæans ſailing from Ionia founded Maſſilia, or Marſeilles; yet Herodotus, who flouriſhed a century and a half after that period, ſhows ſo little knowledge of Gaul as to ſuppoſe that the Danube aroſe in the Pyrenees. The ancient inhabitants were the Celts, of whom even Ariſtotle ſeems only to have learned that they inhabited the region above Iberia or Spain. The ſouthern parts of Gaul became known at an early period to the Romans, who entered that region about 120 years before the chriſtian epoch, and ſoon afterwards founded the province termed Gallia Bracata: but the remainder of this large and fertile country was reſerved for the diſcovery and conqueſt of Julius Cæſar. The ancients ſometimes ſtyled it the country of the Celts, but the only general name ſeems to have been Gallia, which, after the fall of the Roman empire, was ſupplanted by that of Francia or France, becauſe it was ſubdued and poſſeſſed by the Franks, an aſſemblage of tribes from lower Germany.

The

Names. Extent.

The extent of France before the recent acquiſitions was computed at 148,840 ſquare miles; and ſuppoſing the then population to be 26,000,000, would render 174 inhabitants to each mile ſquare[1]. The boundaries were, on the weſt, the Atlantic ocean; on the ſouth, the Mediterranean and Pyrenees; on the eaſt, Savoy, Swiſſerland, and Germany; on the north, the Auſtrian Netherlands, the German ſea, and Engliſh channel. It extends from about the 42d to near the 51ſt degree of N. latitude; from about the 7th degree of longitude weſt from Paris to about the 5th on the eaſt; being in length N. to S. about 600 Britiſh miles, and in breadth W. to E. about 560.

Original Population.

The original population of Gaul has been ably illuſtrated by many authors. The primitive inhabitants were the Celts, to whom no anterior people can be traced in the weſtern regions of Europe; but on the S. W. the Aquitani, of African deſcent, had paſſed from Spain; and on the N. E. the warlike German tribes, known by the name of Belgæ, had ſeized on a third part of the country, where they introduced the Gothic language and manners. On the S. alſo the German Gauls had diffuſed themſelves into what was called Gallia Bracata: nor muſt the Greek colonies be forgotten. The ſolidity and duration of the Roman conqueſts diffuſed the latin language through all ranks. On the N. W. extremity it is probable that there were remains of the ancient Celts, before the Britiſh colony proceeded there in the fifth century, and imparted a name to the diſtrict. The Franks from Germany no doubt contributed conſiderably to the population, and were the ruling people, though not the moſt numerous; and their language was in the courſe of a few centuries immerged in that of the former population.

Progreſſive Geography.

The Romans firſt illuſtrated the Geography of Gaul, which they conſidered as divided into three chief regions, the Celtic, the Belgic, and Aquitanic; the Provincia Bracata being almoſt forgotten in the extent of their ſubſequent conqueſts. Theſe regions were again ſubdivided into no leſs than ſeventeen provinces. On the ſubverſion of

[1] Bœtticher, p. 18. Mr. Young, Travels i. 285, ſuppoſes France to contain 186,282 ſquare miles, or rather, with Necker, 131,722,295 Engliſh acres; while Great Britain and Ireland may preſent an area of 99,335,589 acres.

NAMES. the Roman power new names and diviſions ſucceeded as Flandria, Lotharingia, Neuſtria, Burgundia, Vaſconia, &c.[2]: while Aquitania and Provincia remained ancient names, though not within ancient boundaries. Theſe were ſucceeded by diviſions yet more modern, which in recent times have been ſupplanted by more minute departments.

ANCIENT PROVINCES.	DEPARTMENTS.	CHIEF TOWNS.
Flandre Françoiſe.	Nord.	Douai.
Artois.	Pas-de-Calais.	Arras.
Picardie.	Somme.	Amiens.
Normandie.	Seine Inférieure.	Rouen.
	Calvados.	Caen.
	Manche.	Coutances.
	Orne.	Alençon.
	Eure.	Evreux.
Iſle de France.	Seine.	Paris.
	Seine and Oiſe.	Verſailles.
	Oiſe.	Beauvais.
	Aiſne.	Laon.
	Seine and Marne.	Melun.
Champagne.	Marne.	Châlons-ſur-Marne.
	Ardennes.	Mézières.
	Aube.	Troyes.
	Haute Marne.	Chaumont.
Lorraine.	Meuſe.	Bar-ſur-Ornain.
	Moſelle.	Metz.
	Meurthe.	Nancy.
	Voſges.	Epinal.
Alſace.	Haut-Rhin.	Colmar.
	Bas-Rhin.	Straſbourg.
Bretagne.	Ille and Vilaine.	Rennes
	Côtes-du-Nord.	St. Brieux.
	Finiſterre.	Quimper.
	Morbihan.	Vannes.
	Loire Inferieure.	Nantes.
Maine and Perche.	Sarthe.	Le Mans.
	Mayenne.	Laval.
Anjou.	Mayenne and Loire.	Angers.
Touraine.	Indre and Loire.	Tours.
Orlèanois.	Loiret.	Orleans.
	Eure and Loire.	Chartres.
	Loire and Cher.	Blois.
Berri.	Indre.	Châteauroux.
	Cher.	Bourges.
Nivernois.	Nièvre.	Nevers.
Bourgogne.	Yonne.	Auxerre.
	Côte d'Or.	Dijon.
	Saône and Loire.	Mâcon.
	Ain.	Bourg.
Franche-Compté.	Haute-Saône.	Veſoul.
	Doubs.	Beſançon.
	Jura.	Lons-le-Saunier.

[2] D'Anville. Etats formés en Europe. ANCIENT

Ancient Provinces.	Departments.	Chief Towns.
Poitou.	Vendée.	Fontenay-le-Peuple.
	Deux-Sèvres.	Niort.
	Vienne.	Poitiers.
Marche.	Haute-Vienne, comprizing part of Limosin.	Limoge.
	Creuze.	Guèret.
Limosin.	Corrèze, comprizing part of Upper Vienne.	Tulle.
Bourbonnois.	Allier.	Moulins.
Saintonge, comprising Aunis.	Charente-Inferieure.	Saintes.
Angoumois comprizing part of Saintonge.	Charente.	Angouleme.
Auvergne.	Puy-de-dôme.	Clermont.
	Cantal.	St. Flour.
Lyonnois. Forêt and Beaujolois.	Rhône.	Lyon.
	Loire.	Montbrison.
	Iſére.	Grenoble.
Dauphiné.	Hautes-Alpes.	Gap.
	Drôme.	Valence.
Guyenne, comprehending Gaſcogne.	Dordogne.	Perigueux.
	Gironde.	Bordeaux.
	Lot and Garonne.	Agen.
	Lot.	Cahors.
	Aveyron.	Rhodez.
	Gers.	Auch.
	Landes.	Mont-de-Marſan.
	Hautes Pyrénées.	Tarbe.
Béarn.	Baſſes Pyrénées.	Pau.
Comté-de-Foix.	Arriege.	Taraſcon.
Rouſſillon.	Pyrénées-Orientales.	Perpignan.
Languedoc.	Haute Garonne.	Toulouſe.
	Aude.	Carcaſſonne.
	Tarn.	Caſtres.
	Gard.	Nimes.
	Lozere.	Mende.
	Ardéche.	Privas.
	Haute-Loire.	Le Puy.
	Héraut.	Montpellier.
Provence.	Bouches du-Rhone.	Aix.
	Baſſes-Alpes.	Digne.
	Var.	Toulon.
Corſica.	Golo.	Baſtia.
	Liamone.	Ajaccio.

Ancient Names.	Departments Re-united.	Chief Towns.
Territory of Avignon, county of Venaiſſin, Principality.	Vaucluſe, with the Bouches du Rhone.	Avignon.
Diſtrict of Apt.		
Savoy.	Mont Blanc.	Chambery.
County of Nice.	The Maritime Alps.	Nice.
Biſhoprick of Bâle.	Mont Terrible.	Porentruy.
Auſtrian Hainaut.	Jemmapes.	Mons.

Ancient Names.	Departments Re-united.	Principal Towns.
Weſtern part of Auſtrian Flanders.	Lys.	Bruges.
Eaſtern part of Brabant.	Eſcaut.	Gand. Anvers.
Southern part of Brabant.	Dyle	Bruxelles.
Part of the country of Liege, and of Gelderland.	Meuſe inferieure.	Maëſtricht.
Part of the countries of Liege, and of Limbourg, with the principalities of Stavelo, and Malmedi	Ourthe.	Liége.
County of Namur	Sambre and Meuſe.	Namur.
Duchy of Luxembourg.	Forêts.	Luxembourg.
Part of the Archbiſhopric of Trêves	Rhine and Moſelle.	Coblentz.
Part of the Archbiſhopric of Trêves, and of the Duchy of Deux Ponts.	Sarre.	Tréves.
Part of the ancient Archbiſhopric of Mayence, and of the Duchy of Deux Ponts	Mont-Tonnerre.	Mayence.
Part of the Archbiſhopric of Cologne, of the duchy of Juliers, of Pruſſian Gelderland, of Cleves, Meurs, &c.	Roor.	Aix-la-Chapelle.
Of the territory of Geneva, of the diſtricts of Gex, Larouge, Thonon, &c.	Leman.	Genéve.

Historical Epochs.

The chief hiſtorical epochs of France may be arranged in the following order:

1. The primitive population of the Celts, and the conqueſts of the Aquitani, and Belgæ.

2. The faint notices of the ancients concerning Gaul, from the eſtabliſhment of the Phocean colony at Marſeilles, to the conqueſt by Ceſar.

3. The complete diſcloſure of the country to the learned world by that great general; and the various revolutions and events of which it was the theatre under the domination of the Romans.

4. The final conqueſt of the country by the Franks under Clovis, about the year 490, and the converſion of the Franks to the Chriſtian faith, five years after that period.

5. The obſcure and diſtracted hiſtory of the Merovingian race, (France being frequently ſplit into ſmall kingdoms,) till its final extinction in the middle of the eighth century.

6. The

6. The Carlovingian race, which aſcended the throne in the year 752, and was followed, twenty years afterwards, by the celebrated reign of Charlemagne, who carried the power of France to the utmoſt extent, and ſplendour which it was ever to attain; having, in particular, ſubdued the greateſt part of Germany, where he became the founder and firſt ſovereign of what has ſince been ſtyled the German empire, A. D. 800, and which remained with his deſcendants for near a century. Historical Epochs.

7. The acceſſion of the houſe of Capet in the year 987.

8. The cruſades, in which the French bore the chief ſway.

9. The wars with England. The acquiſition of France by Henry V, and its deliverance by the Maid of Orleans, or rather by Charles VII ſtyled the victorious.

10. The reign of Louis XI, who cruſhing ſuch powerful princes as were left after the Engliſh ſhock, may be regarded as the father of the abſolute monarchy.

11. The reign of Francis I, called the father of the arts and letters, during which the French who had been regarded as barbarians by the more civilized people of Italy, began on the contrary to be diſtinguiſhed by ſuperior refinement. This is alſo the firſt epoch of a ſtanding army in Europe.

12. The inteſtine commotions with the proteſtants, and maſſacre of St. Barthelemy.

13. The reign of Henry IV.

14. That of Louis XIV, too much extolled by the French, and too much degraded by other nations.

15. The recent revolution which has aſtoniſhed Europe, and which in the ſingularity and importance of the events rivals the pages of ancient hiſtory.

Several ancient monuments exiſt in France which are aſcribed to the firſt epoch. The Greek colony at Marſeilles ſeems to have imparted ſome degree of civilization to the country, and the rude Gallic coins are evidently an imitation of the Grecian model. Many of them occur in the metal called by the ancients *electrum*, being a native mixture of Antiquities.

Antiquities. gold and ſilver, probably from the ancient mines in the S. of France.*

The Roman antiquities in France are numerous, and ſome of them in excellent preſervation. Thoſe at Niſmes are particularly celebrated, conſiſting chiefly of an amphitheatre, and the temple called La Maiſon Carrè. At Paris there are alſo ſome curious remains of Roman architecture, but a mere enumeration of ſuch remains would exceed the limits propoſed.

The other periods of French antiquity have been ably illuſtrated by the learned work of Montfaucon; and the diſcloſure of the grave of Childeric near Tournay in the laſt century preſented ſome of the moſt curious fragments. In an old tower of St. Germain du Pré are repreſentations of ſeveral of the firſt monarchs of the Franks, and many of their effigies were preſerved on their tombs at St. Dennis, and other places, till the late revolution.

The monuments of the Carlovingian race are yet more numerous, and Roman moſaics have illuſtrated the fame of Charlemagne. France has been ſo little expoſed to foreign conqueſt, or inroad, that ſeveral ſacred edifices exiſt which were erected in this remote period. Of the later periods the monuments are ſo numerous that it would be vain to attempt to enumerate them. One of the moſt ſingular is the ſuit of tapeſtry, which was preſerved in the Cathedral church of Bayeux in Normandy, repreſenting the beginning and termination of the grand conteſt between William and Harold, which led to the conqueſt of England by the Normans. It is ſaid to have been the work of Matilda, wife of William; and bears every mark of that remote antiquity. The ſtatue of Philip Auguſtus, in the church of the abbey of Victory near Seules, is no mean relic of the arts of the middle ages; and St. Louis called forth many exertions of eccleſiaſtic ſkill. For later periods Montfaucon, and other learned authors, may be conſulted.

* In Picardy, and other parts poſſeſſed by the Belgæ, there are circles, and other monuments of the kind which we call druidic. Near the town of Carnac on the coaſt of Vannes in Bretagne, there is a grand monument of this kind, far exceeding Stonehenge, if the account be not exaggerated, which ſays that there are about 4000 ſtones, many as high as 18 or 20 feet, diſpoſed in the form of a quincunx of eleven rows. (Monthly Magazine, Feb 1801) It is not a little ſingular that the Veneti, or people of Vannes, who oppoſed ſo great a fleet to Cæſar were Belgæ, as Strabo ſpecially informs us, Lib. iv; an additional proof that theſe monuments are neither Celtic nor Druidic, but founded by the Belgic Goths, who long before the Chriſtian æra poſſeſſed the greateſt part of Europe.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtic Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenues.—Political Importance and Relations.

Religion. THE religion of France was the Roman Catholic, till the recent revolution eſtabliſhed freedom of conſcience, or rather gave an undue aſcendancy to concealed atheiſm, which any ſuperſtition remarkably abſurd has a tendency to produce. But the ſtrongeſt minds as uſual remained deiſtical, inſtead of flying from one extreme to another, the accuſtomed courſe of men of volatile reflexion and confined knowledge.

Eccleſiaſtic Geography. The eccleſiaſtic geography of France compriſed 20 archbiſhopricks, including Avignon; and 130 epiſcopal ſees.[1] The number of the clergy has been vaguely computed from 80,000 to 400,000, but the juſt number ſeems to have been 150,000: and in this total, many, no doubt, have been claſſed who are merely ſingers in cathedrals, or lay-officers, and ſervants of the church.

Government. To attempt to deſcribe the preſent government of France would be as vague as writing on the ſands of a troubled ocean, as the whole may be radically changed in the ſhort ſpace that this ſheet is at the preſs. At preſent the form more nearly approaches that of the Anglo-Americans, than any other, the firſt conſul repreſenting the preſident of the united ſtates; while the ſenates, inſtead of being permanent, are ſummoned or diſmiſſed at his will, and are ruled by a devoted majority. Equally futile would be the attempt to deſcribe laws, where there is no code; and which fluctuate according to the deſpotiſm or clemency of the rulers.

Population. The population of France was formerly computed, as already ſtated, at 26,000,000, but the recent acquiſitions, if durable, would ſwell it to

[1] Young, i 670.

Population. the formidable extent of 32,000,000. At all events France is a country teeming with population, and quickly reſumes her vigour after ſtupendous loſſes, as Europe has repeatedly experienced.

Colonies. The French colonies are at preſent unimportant, notwithſtanding the addition of the Spaniſh part of St. Domingo. The beſt of them have been convulſed and ruined for a ſeaſon by inteſtine commotions, ariſing from the wild theory of the rights of man being extended to the negroes, who feel that they have a right to ruin and deſtroy, but none to build and improve. Perhaps the right of horſes may next be diſcuſſed; and our race-horſes be faſtened to the plough, while our coach-horſes ſtart for the prize at Newmarket. The intercourſe with the remaining colonies is ſo much obſtructed by the Engliſh dominion of the ſea, that they can hardly be admitted into an eſtimate of the preſent ſituation of France.

Army. The political convulſions which have agitated this unhappy country, the enthuſiaſm, and yet more the deſpotiſm, of freedom, have occaſionally within theſe few years ſwelled the French armies to the amazing computation of upwards of a million. But it may ſafely be doubted whether the real amount at any time exceeded 600,000 effective men, the French having ſwelled the number to intimidate their enemies, and the latter to apologize for their defeats. Under the royal government the army of France was eſtimated at 225,000, of which were infantry 170,000, cavalry 44,000, artillery 11,000*.

Navy. The maritime power of France was formidable even to England, till the battle of La Hogue, ſince which the Britiſh flag has reigned triumphant on the ocean, and the ſtruggles of France, though often energetic, have encountered the fixed deſtiny of inevitable defeat. So frequent, fatal, and deciſive, have been the recent humiliations of the French navy, that hardly the ſemblance of a warlike fleet could be preſented, except by the conſtrained aſſiſtance of Spain. About twenty

* By the Etat Militaire, a calendar revived, for the eighth year of the republic, it appears that the French armies conſiſted of 110 demi-brigades, each of three batallions, and when complete of 3,200 men: of 30 light demi-brigades of like number: 8 regiments of foot artillery, each of 20 companies; 8 of horſe-artillery, each of 466 men: 26 regiments of cavalry, and 20 regiments of dragoons, each of 800 men: 25 regiments of chaſſeurs, and 12 regiments of huſſars of the like number. The whole, without including the engineers, miners, &c. &c. forming a force of 413,728.

ſhips

ſhips of the line conſtitute the maritime power of France, being not above one quarter of its former extent. Nor can the loſs be eaſily redeemed, for though ſhips may be bought or conſtructed, it muſt be the labour of many years to form a numerous body of experienced ſeamen. Navy.

The revenue of France was formerly computed at about 30,000,000l. ſterling; from which, after deducting the expence of collection, and the payment of the intereſt on the national debt, there remained clear about 18,000,000. The national debt may be regarded as extinguiſhed; but any attempt to calculate the preſent ſtate of the revenue muſt be vague and inconcluſive. According to the moſt recent accounts it amounted to about 600,000,000 livres, or about 25,000,000l. ſterling. Revenues.

The common current money of France has been computed at 90,000,000l. ſterling, while that of Great Britain has been eſtimated at 40,000,000. The late conqueſts have enriched France, and eſpecially Paris, with the rapine of many provinces; and the generals vie with the Romans in wealth and luxury.

The political importance and relations of France continue to be vaſt; nor was the prodigious power of this ſtate ever ſo completely felt and acknowledged, as after a revolution and a war which threatened her very exiſtence. When expected to fall an eaſy prey, ſhe ſuddenly aroſe the aggreſſor, and has aſtoniſhed Europe by the rapidity and extent of her victories. The rivalry of many centuries between France and England ſunk into a petty diſpute, when compared with this mighty conteſt, which will be felt and deplored by diſtant poſterity. Yet by the protection of all-ruling Providence the Britiſh empire roſe ſuperior to the ſtruggles, and remained free from thoſe ſcenes of carnage and devaſtation, which attended the French progreſs into other countries: and the French navy being reduced to ſo inſignificant a force, Great Britain has leſs to apprehend from France, than at any former period. Yet this invaluable advantage is ſomewhat diminiſhed by the decided preponderance of French power on the continent; particularly in Holland, which formed the grand chain of our commercial intercourſe. After all the continental powers have failed, it would be vain to ſuppoſe that any one of them, ſingle and detached, Political Importance and Relations.

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Political Importance, &c.

can be really formidable to France. And though ſome thouſands of miſerable peaſants may be at any time induced by foreign gold to form an inſurrection in any country, and deſperadoes as eaſily found to conduct them, yet there is little cauſe to ſuppoſe that France would be divided againſt itſelf; for the love and admiration of his country may be pronounced eſſential paſſions of a Frenchman, who deſpiſes a foreigner while he is under the neceſſity of requeſting his aſſiſtance. The diſtance of Ruſſia, the ſecond if not the firſt power on the continent, renders her favour or enmity of ſmall importance to France; but between this laſt country and the Auſtrian power laſting jealouſy and enmity have ſubſiſted, ſince the reign of the Emperor Charles V; and a colliſion of intereſts in Germany, Swiſſerland, and Italy have contributed to maintain this rivalry. The envied acquiſition of Sileſia, and other cauſes, having likewiſe excited a rooted hatred between Auſtria and Pruſſia, it is natural that the latter country ſhould either conſpire with France againſt the Auſtrian greatneſs, or connive at its fall. Yet to a calm and unprejudiced ſpectator it might appear the moſt ſound policy for theſe three great powers to abandon inimical views, and to regard with a general eye of defence and jealouſy the growing and already exorbitant, power of Ruſſia; which may in time conſider them as provinces, and overflow Europe with another torrent of barbariſm.

CHAPTER III.

CIVIL GEOGRAPHY.

Manners and Cuſtoms.—Language.—Literature.—Education.—Univerſities.—Cities and Towns.—Edifices.—Inland Navigation.—Manufactures and Commerce.

MANNERS AND CUSTOMS.

THE manners and cuſtoms of the French have been ſo often delineated, that the theme has become trivial and familiar. The moſt pleaſing parts of the portrait are vivacity, gaiety, politeneſs, a ſingular diſpoſition towards ſocial enjoyments, and that ſavoir vivre which enables the adept to diſpoſe of his occupations and pleaſures in an agreeable ſucceſſion, free from liſtleſſneſs or fatigue. In general Frenchmen regard care as a mortal poiſon, and ſtudy, if poſſible, to avoid its moſt diſtant approach. On the other hand ancient and recent events conſpire to affix a ſanguinary ſtain on the national character, which one would little expect amid ſo much gaiety, and ſeeming benevolence. The cauſes of this incongruity might afford an ample ſubject for philoſophical enquiry. Even the violent changes which have taken place ſeem to have little affected their characteriſtic gaiety, and Paris continues to be one of the happieſt cities in the world: while the ſcreams of maſſacre reſounded in ſome parts of the city, in others the theatres were crowded, and nothing was heard but ſounds of pleaſure.

The ancient and rooted enmity between France and England nouriſhed many prejudices againſt the French character, which have ſince diſappeared in the reports of more candid authors. Yet, with travellers accuſtomed to the elegance of Engliſh life, many of the French manners and cuſtoms cannot be reconciled to ideas of phyſical purity; and the example of the perſonal and domeſtic cleanlineſs of the Engliſh muſt ſtill be recommended to imitation. The laws and decency of marriage are alſo frequently ſacrificed; and the looſeneſs of the French morals, in regard to the ſex, has become proverbial. A republican

Manners and Customs.

publican form of government has not ſuper-induced republican manners, nor has the liberty of divorce proved any bond of chaſtity. As every thing continues to be ruled by faſhion, it is not unreaſonable to hope that even virtue may become faſhionable.

While ſome phyſicians have attempted to account for Engliſh melancholy from the quantities conſumed of animal food, it appears on the contrary that a Frenchman will devour as much as two Engliſhmen, diſguiſed, indeed, and modified, ſo as to beguile and ſtimulate the appetite to larger indulgence. In the difference of climate therefore, and in the uſe of light wines, muſt be ſought the chief phyſical cauſes of this diſcrepancy. The houſes of the French often diſplay a ſtrange mixture of magnificence and naſtineſs; and while even a cottage in England will ſhew attention to the comforts, conveniences, feelings, and infirmities of human nature, in France the noſe may be aſſailed, while the eyes are enraptured. France has long afforded models of dreſs to all Europe, nor have the faſhions of Paris yet totally loſt their fantaſtic authority. In the frequent and ridiculous alluſions to the ancient republics, none of which bore the moſt diſtant reſemblance of modern France, it was natural that the Grecian and Roman dreſs ſhould afford models of imitation, and an infalliable conſequence that the dreſs would become more elegant. In a country where life itſelf is an amuſement it is to be expected that the diverſions ſhould be infinitely varied. In the capital theatrical repreſentations bear the chief ſway, and every evening about twenty theatres are open and full. Yet theſe republicans do not rival their favourite Greeks and Romans, in opening theatres and amphitheatres at the expence of the government, an inſtitution worthy of modern imitation, as to afford amuſements to the people may frequently ſave them from finding their own amuſements in drunkenneſs and other low vices.

Language.

The French language is the moſt univerſally diffuſed of any in Europe. In variety, clearneſs, and preciſion, and idioms adapted to life, buſineſs, and pleaſure, it yields to no modern ſpeech; but it wants force and dignity, and yet more, ſublimity. The critics and academicians of the ſeventeenth century enacted ſuch ſevere laws of purity, that, like gold re-

duced to the utmoſt fineneſs, it has become ſoft and incapable of deep impreſſions. The French language is a well known corruption of the Roman, mingled with Celtic and Gothic words and idioms. Even in the tenth century it continued to be called Romance; a name which afterwards paſſed to the poems and tales of chivalry, as being compoſed in this dialect. One of the earlieſt ſpecimens of French proſe is the hiſtory by Villehardouin, which was followed by Joinville's life of St. Louis, and the copious and ſingular chronicle of Froiſſart. But while the Italian remains the ſame from the days of Dante and Petrarca, the epoch of claſſical purity of the French language commences with the reign of Louis XIV. The recent revolution has introduced ſuch exuberance of new words, and phraſes, that a neological dictionary would be required to explain them. Language.

The literature of France has in modern times excited great reſpect and admiration. In the bold exertions of inventive genius, and even in profound productions of philoſophy, France cannot aſpire to vie with Italy or England; but in the pleaſing and beautiful paths of invention, and in books of elegant learning and exact ſcience, ſhe remains almoſt unrivalled. French literature, like that of the other modern countries of Europe, originates with the eccleſiaſtics, who compiled chronicles and theological productions. Even in the Roman period ſome authors of reſpectability appeared in France, as Auſonius, a native of Bourdeaux; Sidonius Apollinaris, and others; and Severus Sulpitius, author of the life of St. Martin, has been ſtyled the chriſtian Salluſt. Nor did the conqueſt of Gaul by the Franks break the golden chain of ſcience, which was continued by Gregory of Tours, and other venerable writers. The collection of ancient hiſtorians of France is ſingularly complete, and important. In the eleventh century the uſe of the Latin began to be ſupplanted by the modern dialect. But it would be idle and ſuperfluous to attempt to enumerate the crowd of modern authors, who have reflected honour on their language and country. Who is a ſtranger to the Roman grandeur of Corneille, to the tender and elegiac elegance of Racine, the tragic pomp and terror of Crebillon, the comic powers of Moliere, the naiveté, the ſubtle ſimplicity of La Literature.

Literature. Fontaine, the placid inſtruction of Fenelon, the gaiety of Greſſet, the cauſtic vivacity of Voltaire?

Education. The ſtate of education in all the Catholic countries was very defective, till the Jeſuits acquired great eſtimation by their attention to this important department; to which if their exertions had been ſolely directed they would have proved a moſt uſeful body of men. The want of proper ſchools for the poor will, it is hoped, be remedied in the new courſe of things; and to this cauſe may perhaps be chiefly imputed the want of real and ſolid information, and of talent for political buſineſs, which have ſurpriſed the ſpectators of the French revolution. When the civil commotions in England deſtroyed all power, except that of knowledge, the number of men of talents, who aroſe in every department, infinitely exceeds that which the recent events of France have diſplayed. Nor, as ignorance naturally leads to crime, and the want of education at once darkens and hardens the mind, can this defect be excepted from the cauſes of the ſanguinary events which have appalled Europe. National education has juſtly attracted the attention of the new rulers, with what ſucceſs time muſt diſcover; for there is a wide difference between forming a plauſible ſcheme, and the putting of it in laſting execution, with regulations and funds that ſupport themſelves. Under whatever form of government the ignorant will be found the moſt unmanageable; and thoſe jacobines who attempted to extinguiſh what they termed the ariſtocracy of knowledge, united, as uſual, every vice to conſummate ignorance.

Univerſities. France formerly boaſted of twenty-one univerſities; in the north Douay, Caën, Paris, Rheims, Nanci, Straſbourg, in the middle provinces Nantes, Angers, Poitiers, Orléans, Bourges, Dijon, Beſançon, and in the ſouth Bourdeaux, Pau, Perpignan, Toulouſe, Montpellier, Aix, Orange, Valence.[1] Of theſe the Sorbonne of Paris was the moſt celebrated; but it ſhewed an irremediable tendency to prolong the reign of ſcholaſtic theology. The academies and literary ſocieties were computed at thirty-nine. Thoſe of Paris in particular have been long known to the learned world, by elegant and profound volumes of diſ-

[1] La Croix Geographie, Tome i. 279.

ſertations

fertations on the Sciences, and on the Belles Lettres. Nor have public inſtitutions of this kind been foreign to the conſideration of the new government. UNIVERSITIES.

The ample extent of this country diſplays a correſponding number of important cities and towns. Paris, the capital, riſes on both ſides the river Seine, in a pleaſant and healthy ſituation, with delightful environs. It is divided into three parts; the town, *ville*, on the north, the city in the middle, that part called the univerſity on the ſouth. It is mentioned by Cæſar[2] as being reſtricted in his time to an iſland in the midſt of the Seine. An intelligent traveller ſuppoſes Paris to be one third ſmaller than London:[3] and if ſo the inhabitants can ſcarcely exceed 400,000; yet ſome compute them at more than 600,000. The houſes are chiefly built with free ſtone, from quarries like catacombs which run in various directions under the ſtreets; ſo that an earthquake would be peculiarly deſtructive, and might completely bury the city. The banks of the Seine preſent noble quays; and the public buildings are not only elegant in themſelves, but are placed in open and commanding ſituations. The Louvre is arranged among the beſt ſpecimens of modern architecture; and the church of St. Genevieve, now the Pantheon, is alſo deſervedly admired; nor muſt the Thuilleries, the Palais Royale, and the Hoſpital of Invalids be forgotten. Paris no doubt exceeds London in magnificence, but yields greatly in cleanlineſs and convenience; and the ſtreets, generally without accommodation for foot paſſengers, loudly beſpeak the inattention of the government to the middle and lower claſſes of men. The environs of the Bois de Boulogne, Mont Martre, Paſſy, St. Dennis, &c. are pleaſingly diverſified. The recent revolution has little impaired the beauty of Paris; on the contrary the rapine of ſeveral provinces has enlarged and adorned the public collections; and by enriching numerous individuals, has enabled them to increaſe their favourite city with new and beautiful ſtreets and ſquares. Cities and Towns. Paris.

Next to Paris in extent and population was the noble city of Lyons, which was ſuppoſed to contain about 100,000 ſouls. As the chief manufactures were articles of luxury, ſilk, cloths of gold, and ſilver, &c. Lyons.

[2] vii. 54. [3] Young's France, i. 76.

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Cities and Towns.

it was natural that this venerable town ſhould be firmly attached to the ancient ariſtocracy, though with conſequences incalculably fatal to its proſperity. During the infatuated reign of the jacobins it was beſieged, captured, and after the wildeſt and baſeſt maſſacres, was doomed to final demolition. But as there are bounds even to rage and folly, this decree was only executed in part; though Lyons will probably never recover its ancient extent and opulence, for commerce when once expelled ſeldom returns.

Marſeilles.

The third and fourth cities of France are Marſeilles, and Bourdeaux; each peopled by about 80,000 ſouls. The foundation of Marſeilles has been already mentioned, and the city remains worthy of its ancient fame, the port being at the ſame time one of the beſt and moſt frequented in the whole Mediterranean. The Exchange is a noble building, and the new parts of the city are beautiful.

Bourdeaux.

Bourdeaux was a proſperous city, but the trade muſt have ſuffered great injury. The port is ample and commodious, with extenſive quays. The chief exports are wine and brandy, particularly the vin de Bourdeaux, which we term claret, becauſe it is of a clear and tranſparent red, while tent and ſome other wines are opake. The theatre is the moſt magnificent in France, and the actors uſed to receive extravagant ſalaries; and as much as London exceeds Paris, ſo much did Bourdeaux, before the revolution, tranſcend Liverpool.[4]

In giving a brief idea of the other chief cities and towns of France, it may be premiſed that thoſe of the Netherlands formerly belonging to Auſtria, are reſerved for ſeparate deſcription. But among thoſe which formerly belonged to what was ſtyled French Flanders, may be named

Liſle.

Liſle and Valenciennes; the former more memorable for its ſtrength, than for its manufactures of camlets and ſtuffs. The population is

Valenciennes

computed at 60,000. Valenciennes is alſo remarkable for the ſtrength of its fortifications; yet on the 26th July, 1793, it ſurrendered to the Engliſh and Auſtrian army, under the Duke of York; but was retaken by the French army in the following year. The chief manufactures, lace, camlets, and cambrics.

[4] Young, i. 60.

Amiens

Cities and Towns.

Amiens.

Amiens is a conſiderable town, with a population of about 40,000; but Rouen, formerly the capital of Normandy, contains 72,000 ſouls, and carries on a conſiderable trade. Breſt is more remarkable as being the chief maritime arſenal of France in the North, than for its extent or population, which does not exceed 30,000. Nantes, with a population of 56,000, is a beautiful commercial city, with a ſplendid theatre, and many new ſtreets, but the environs are barren and unintereſting.[5] Orleans, a city of about 40,000 ſouls, is celebrated by two ſieges which it ſuſtained, one againſt Attila, king of the Huns, in the fifth century, the other againſt the Engliſh in the fifteenth. The duchy of Orleans has long been the appanage of a branch of the royal line, the revenue having been computed at the enormous ſum of about 300,000l. ſterling. Nancy in Lorrain is not equal to Metz in extent, but is one of the moſt beautiful cities in France. Straſbourg is a venerable city, with a population of about 40,000, ſeized by Louis XIV in 1681, and confirmed to him by the peace of Reſwick in 1697. The fortifications are ſtrong; and the gothic cathedral preſents the well-known ſpire of 574 feet in height.

Toulouſe.

Few of the other inland towns deſerve mention, except Toulouſe, a city of 50,000 ſouls; and the parliament of which was eſteemed, under the old government, next in rank to that of Paris: the extent is great, but the manufactures are trifling, though here be the termination of the great canal, opened by Louis XIV, from the Mediterranean to the Garonne, a work truly magnificent, and which alone would preſerve his memory to future ages. Montpellier, on the Mediterranean, with delicious and highly ornamented environs, and a noble aqueduct, is of conſiderable extent, but particularly celebrated by the ſalubrity of the air, and an ancient ſchool of medicine. The proſpect is ſingularly extenſive, and intereſting, embracing the Pyrenees on the one ſide, and on the other, the yet grander ſummits of the Alps.[6]

Edifices.

Several of the moſt noble edifices of France are in Paris, and its vicinity. To thoſe already mentioned muſt be added the palace of Verſailles, rather remarkable however for the profuſion of expence, than for the ſkill of the architect; the parts being ſmall and unhar-

[5] Young's France, i. 104.

[6] Ibid. i. 49.

monious,

Edifices. monious, and the general effect rather idle pomp than true grandeur. The bridge of Neuilé is eſteemed the moſt beautiful in Europe, conſiſting of five wide arches of equal ſize, inſtead of our ſmall ſide arches which degrade the dignity of ſuch fabrics. The ancient cathedrals and caſtles are ſo numerous that it would be idle to attempt to enumerate them; and the French nobility were not contented, like thoſe of Spain, with large houſes in the cities, but had grand chateaux ſcattered over the kingdom, to which, however, they ſeldom retired, except when compelled by formal baniſhment from the court.

Inland Navigation. The inland navigation of France has been promoted by ſeveral capital exertions. The canal of Briare, otherwiſe ſtyled that of Burgundy, was begun by Henry IV, and completed by Louis XIII, opening a communication between the Loire and the Seine, or in other words between Paris and the weſtern provinces. Paſſing by Montargis it joins the canal of Orleans, and falls into the Seine near Fontainbleau. This navigation of forty-two locks, is of great utility in inland commerce[7].

The canal of Picardy extends from the Somme to the Oiſe, beginning at St. Quintin, and forming a convenient intercourſe to the provinces in the N. E.

Canal at Languedoc. But the chief work of this deſcription is the celebrated canal of Languedoc, commenced and completed in the reign of Louis XIV, by Riquet the engineer, under the auſpices of that able miniſter Colbert. Fifteen years of labour were employed, from 1666 to 1681, and the mechanical ignorance of the period was ſurpriſed at a tunnel near Beziers, of only 720 feet, lined with freeſtone. This noble canal begins in the bay of Languedoc; and at St. Ferriol is a reſervoir of 595 acres of water: it enters the Garonne about a quarter of a mile below the city of Toulouſe. The breadth, including the towing paths, is 144 feet; the depth 6 feet; the length 64 French leagues, or about 180 miles. The expence was more than half a million ſterling.

The other canals in France are very numerous; but, though of ſupreme utility, are too minute to enter into this general view of the kingdom.

[7] Philips, 51.

For

MANUFACTURES AND COMMERCE.

For a century, extending from 1650 to 1750, Mr. Young[8] ſuppoſes France to have poſſeſſed the moſt flouriſhing manufactures in Europe; and French writers affect to ſpeak of the Engliſh manufactures as being of recent fame. A ſketch of this important ſubject, particularly intereſting to Great Britain, as the rival of France, ſhall here be traced from that well informed author. At Abbeville was a famous manufacture of broad cloth; and another at Louviere in Normandy. At the ſame place, and at Amiens, were manufactures of ſtuffs, worſteds, &c. and ſome of cotton. The manufactures of Orleans were ſtockings, and refined ſugar. At Chateau Roux another manufactory of broad cloths; and in the ſame neighbourhood large iron forges. At Limoges an hundred looms were employed in weaving druggets of hemp and wool; and the paper mills amounted to ſeventy. The large woollen manufactory at Cahors had declined; but thoſe of Montauban continued to flouriſh. At Montpellier were conſiderable manufactures of blankets and ſilk handkerchiefs; but thoſe of Niſmes were ſtill more important in ſilk, cotton, and thread: and at Gange was the chief manufacture of ſilk ſtockings in all France. The Londrins for the Levant were chiefly made at Beg-de-Rieux, and at Carcaſſonne. At Pau are large manufactures of linen. Tour has long been celebrated for ſilks. Beauvais, one of the moſt active towns in France, ſupplies tapeſtries and printed callicoes. The fabrication of plate glaſs at St. Gobin is well known as the firſt in Europe. In melting the glaſs beech wood only is employed, which is ſuppoſed to be the chief cauſe of its ſuperiority over that of England. At St. Quintin are made linen, cambric, and gauzes. Cambrics derive their name from Cambray; and the laces of Valenciennes have been long known. Liſle diſplays fine cloths and camblets. Mr. Young ſtyles Rouen the Manchester of France, being a town eminent in commerce, and in manufactures of velvet, and cotton cloths; and Caen boaſts of her ſilky fleeces. Bretagne in general has numerous manufactures of thread and linen. The fine cloths made at Louviere our author eſteems the firſt in the world, and at the ſame place is a large cotton mill. Rheims is remarkable for woollens. The ſilk manufactures of Lyons were eſtimated to employ

[8] i. 569.

Manufactures and Commerce.

60,000 people, the looms being computed at 12,000. Iron manufactures flouriſhed at Nantes, Mont Cenis, St. Phillippe-en-foret, and ſeveral other places.

From this detail ſome idea may be formed of the commerce of France, for minute tables of which the reader is referred to Mr. Young's work, from which it appears that the chief imports are raw ſilk, wool, hemp, ſoda, and potaſh, raw hides, tallow, and timber; and the chief exports, manufactured ſilks, woollens, and linens of various kinds, gloves, ſkins, ſoap, oxen, ſheep, mules, and above all wines and brandies. By the account for 1784, which did not include the provinces of Lorrain and Alſace, nor the weſt Weſt Indian trade, the ſtatement was

Total exports,	307,151,700 livres.
—— imports,	271,365,000
Balance,	35,786,700 or £1,565,668 ſterling.

The trade with the Weſt Indies gave a large balance againſt France, which in 1786 exported to the amount of more than 64,000,000 livres, but the imports exceeded 174,000,000. The average imports of France in 1788 were about twelve millions and a half ſterling, the exports nearly 15,000,000. The imports of Great Britain in the ſame year were about 18,000,000, the exports ſeventeen and a half.[9] Since the French revolution the commerce of England has been conſtantly on the increaſe; while that of our rival has been almoſt annihilated.

9 Young, i. 520.

CHAPTER IV.

NATURAL GEOGRAPHY.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

CLIMATE AND SEASONS.

THE climate of ſo extenſive a kingdom as France, may be expected to be various. In general it is far more clear and ſerene than that of England; but the northern provinces are expoſed to heavy rains, which however produce beautiful verdure and rich paſtures[1]. The author quoted has obſerved, that rain is ſeldom ſo inceſſant in England, as not to preſent interruptions in the courſe of every day; while on the continent it flows unabated. He divides France into three climates, the northern, the central, and the ſouthern. The firſt yields no wines; the ſecond no maize; the third produces wines, maize, and olives. Theſe diviſions proceed in an oblique line from the S. W. to the N. E., ſo as to demonſtrate "that the eaſtern part of the kingdom is two and a half degrees of latitude hotter than the weſtern, or if not hotter more favourable to vegetation." The central diviſi n Mr. Young conſiders as one of the fineſt provinces in the world, containing among others the province of Touraine, which the French particularly celebrate, yet it is expoſed to violent ſhowers of hail. The chief diſadvantage of the third climate is the flies. "They are the firſt of torments in Spain, Italy, and the olive diſtrict of France: it is not that they bite, ſting, or hurt, but they buz, teaze, and worry: your mouth, eyes, ears, and noſe, are full of them: they ſwarm on every eatable, fruit, ſugar, milk, every thing is attacked by them in ſuch myriads, that, if they are not driven away inceſſantly by a perſon who has nothing elſe to do, to eat a meal is impoſſible." One great

[1] Young's, France, i. 309.

Climate and Seasons.

advantage of the climate of France ariſes from its being adapted to the culture of the vine, which flouriſhes in ſpots that would otherwiſe be waſte.

Face of the Country.

The face of the country is generally plain; and the only mountains deſerving of the name are found in the South, in Auvergne and Languedoc, Dauphiné and Provence. Brittany correſponds greatly in appearance with Cornwall, and abounds in extenſive heaths. In Lorrain are found the mountains of Voſges, far inferior to the ſouthern elevations. For beauty Mr. Young prefers the Limoſin to any other province of France; yet much of the kingdom is finely diverſified with hill and dale, and the rivers, particularly the Seine, are often grand and pictureſque.

Soil and Agriculture.

The variations of the ſoil have been ably illuſtrated by the ſame ſkilful farmer[1]. The N. E. part from Flanders to Orleans is a rich loam. Further to the W. the land is poor and ſtoney; Brittany being generally gravel, or gravelly ſand, with low ridges of granite. The chalk runs through the centre of the kingdom, from Germany by Champagne to Saintonge; and on the N. of the mountainous tract is a large extent of gravel, probably waſhed down in primeval times; but even the mountainous region of the ſouth is generally fertile, though the large province formerly called Gaſcony preſent many *landes*, or level heaths.

The ſame writer has ably illuſtrated the defects of French agriculture, which cannot be more effectually expoſed than in his own words. "In order the better to underſtand how the great difference of product between the French and Engliſh crops may affect the agriculture of the two kingdoms, it will be proper to obſerve that the farmer in England will reap as much from his courſe of crops, in which wheat and rye occur but ſeldom, as the Frenchman can from his, in which they return often.

An Engliſh courſe.		A French courſe.	
1, Turnips		1, Fallow	
2, Barley		2, Wheat	18
3, Clover		3, Barley, or oats	
4, Wheat	25	4, Fallow	

[1] Young's France, i. 296.

Carried over 25—18

Engliſh courſe.		French courſe.	
Brought over	25	Brought over	18
5, Turnips		5, Wheat	18
6, Barley		6, Barley, or oats	
7, Clover		7, Fallow	
8, Wheat	25	8, Wheat	18
9, Tares or beans		9, Barley, or oats	
10, Wheat	25	10, Fallow	
11, Turnips		11, Wheat	18
	75		72

"The Engliſhman in eleven years gets three buſhels more of wheat than the Frenchman. He gets three crops of barley tares or beans, which produce nearly twice as many buſhels per acre, as what the three French crops of ſpring corn produce. And he further gets at the ſame time three crops of turnips and two of clover, the turnips worth 40s. the acre, and the clover 60s.; that is 12l. for both. What an enormous ſuperiority! More wheat; almoſt double of the ſpring corn; and above 20s. per acre, per annum, in turnips and clover. But further; the Engliſhman's land, by means of the manure ariſing from the conſumption of the turnips and clover, is in a conſtant ſtate of improvement; while the Frenchman's farm is ſtationary. Throw the whole into a caſh account, and it will ſtand thus:——

Engliſh Syſtem.				French Syſtem.			
Wheat 75 buſhels at 5s.	18	15	0	Wheat 72 buſhels at 5s.	18	0	0
Spring corn three crops at 32 buſhels, 96 buſhels at 2s. 6d.	12	0	0	Spring corn, three crops at 20 buſhels, 60 buſhels at 2s. 6d.	7	10	0
Clover, two crops	6	0	0				
Turnips, three crops	6	0	0				
	42	15	0		25	10	0
Per acre, per annum	3	17	8	Per acre, per annum	2	6	4

"In allowing the French ſyſtem to produce twenty buſhels of ſpring corn, while I aſſign thirty-two only to the Engliſh, I am confident that I favour the former conſiderably; for I believe the Engliſh produce is double of that of France: but ſtating it as above, here are the

Soil and Agriculture.

the proportions of forty-two on an improving farm, to twenty-five on a ſtationary one; that is to ſay a country containing 100,000,000 acres produces as much as another whoſe area contains 168,000,000, which are in the ſame ratio as thirty-ſix and twenty-five[3]." For ample and numerous illuſtrations of the defects of the French ſyſtem, the reader is referred to the ſame uſeful publication. In ſome of the provinces, however, the plans of agriculture correſpond with the natural fertility of the ſoil; and others diſplay a moſt laudable induſtry. A ſtriking inſtance of the latter is the artificial fertility conferred on ſome of the barren mountains of the Cevennes[4]. As the waters which run down the ſides carry conſiderable quantities of earth into the ravines, walls of looſe ſtones are erected which permit the waters to paſs when they are clear; but when turbid their load of earth is gradually depoſited againſt the wall, and affords a ſpace of fertile ſoil. Succeſſive ramparts are thus erected to the very top of the mountain; and the water, having no longer a violent fall, only ſerves to nouriſh the crops, which are moreover protected by planting fruit trees at certain intervals, ſo as to lend ſecurity and conſiſtence to the new acquiſition. By another proceſs calcareous mountains, which generally riſe in ſhelves, are rendered productive by cutting away the rock behind the ſhelf, which ſupplies materials for a low wall around the edge. The interval is afterwards filled with earth, and the barren mountain is crowned with luxuriant terraces.

Rivers.

The rivers of France form the next object of conſideration; and among theſe four are eminent, the Seine, the Loire, the Rhone, and the Garonne. The firſt is one of the moſt beautiful ſtreams of France, riſing near Saint Seine, in the modern department of Côte D'Or, a portion of ancient Burgundy, it purſues its courſe to the N. W. till it enter the Engliſh channel at Havre de Grace, after a courſe of about 250 Engliſh miles. It may here be remarked that the length aſſigned to rivers is not calculated with exactneſs, a work of infinite and uncertain labour, but merely affords a comparative ſcale, to judge of the relation, which the courſe of one river bears to another.

Seine.

[3] Young's France, i. 357. [4] Nicholſon's Journal, iii. 295.

The

The Loire derives its ſource from Mont Gerbier in the N. of ancient Languedoc; and after a northern courſe turns to the weſt, entering the ocean a conſiderable way beyond Nantes, after a courſe of about 500 miles. Loire.

The Rhone ſprings from the Glacier of Furca, near the mountain of Grimſel in Swiſſerland; and after paſſing the beautiful vales of the Vallais, and the lake of Geneva, bends its courſe towards the ſouth, and enters the Mediterranean. The comparative courſe 400 miles. Rhone.

The Garonne riſes in the vale of Arau in the Pyrenees. The courſe of this river is generally N. W. It extends to about 250 miles. After its junction with the Dordogne, it aſſumes the name of the Gironde. Garonne.

The Seine is almoſt univerſally pleaſing and pictureſque; and the Loire preſents noble features from Angiers to Nantes, but the reſt of its immenſe courſe is disfigured with rough gravel[5]. The Garonne generally pervades a flat country, and is tamely fringed with willows. The Rhone is a noble and rapid ſtream.

France is adorned and enriched with many rivers of ſmaller courſe, and reputation; as the Saone which joins the Rhone near Lyons; the Lot and Dordogne which join the Garonne; and the numerous tributary ſtreams of the Loire. The uncertainties of time and war as yet prevent the geographer from regarding the Meuſe and Moſelle, and even the Rhine, as rivers of France.

A few ſmall lakes occur in Provence, and perhaps in ſome of the other provinces, but only adapted to the minute deſcription of the topographer, France and Spain being ſingularly deficient in this pleaſing feature of landſcape. Lakes.

Before proceeding to the grand chain of mountains in the S. of France, it may be proper briefly to mention a few mountainous tracts in the north. Thoſe of Brittany are granitic and primitive, but like thoſe of Cornwall of ſmall elevation. They divide into branches towards Breſt and Alençon. The Voſges*, in the department of that name, Mountains.

[5] Young's France, i. 305.

* The mountains of Voſges, and the diſtrict to the eaſt, are by the Germans called the Hundſruck. If the French extend their boundaries to the Rhine, this intereſting portion of Germany will form a valuable acceſſion, including not only a great part of the Palatinate, with the cities of Mentz, Wurms, and Spire, but the countries of Simmern, Sponheim, Oberſtein, Birkenfeld, and Zweybrucken,

Mountains. name, in the S. of ancient Lorrain, are ſuppoſed to be connected with the mountains of Swiſſerland[6].

Mont Jura. Mont Jura, a vanguard of the Alps, forms a boundary between France and Swiſſerland. If Mont Blanc be admitted among the French mountains, the other Alps cannot rival its ſupreme elevation. The ancient province of Dauphiné diſplays ſeveral alpine branches, which alſo extend through great part of Provence.

Cevennes. To the weſt of the Rhone ariſes the grand chain of the Cevennes, which have been deſcribed by a recent author[7]. He obſerves that the Cevennes ſeem the principal centre of the primitive mountains of France, extending into ſeveral branches. The principal branch runs along the river Ardeche towards Ales. 2. Another traverſes the Rhone on the ſide of Tournon and Vienne, towards the plains of Dauphiné. 3. That forming the mountains of Beaujolois, paſſing by Tarare, Autun, &c. till it be loſt at Avalon. This branch is about 70 leagues in length, but in breadth ſometimes not more than a league: it contains the copper mines of Cheſi and St. Bel, and ſome lead mines. Coal is alſo found in the declivities. 4. The branch which, ſeparating the baſon of the Loire from that of the Allier, forms the mountains of Forez. It paſſes Roanne on the one ſide and Thiers on the other, and is loſt towards St. Pierre le Moutier. The plain of Montbriſſon is bounded by theſe third and fourth granitic branches. 5. That which, ſeparating the baſon of the Allier from that of the Cher, paſſes by Clermont to Montluçon. 6. That ſtretching towards Limoges. 7. That from the Dordogne towards the Charente. 8. That dividing the Dordogne from the Garonne.

This account is not a little confuſed, as here are abundant branches without one trunk. The grand chain of the Cevennes ſeems to run from N. to S., and to ſend out branches towards the E. and W. In the modern departments of the upper Loire and Cantal, are appearances

brucken, conſtituting the important duchy of that name, more generally called Deux Ponts, ſuppoſed to contain 180,000 inhabitants, and yielding a revenue of 500,000 florins. Conſiderable chains of mountains appear on the W. and E. of Deux Ponts, remarkable for mineral productions, eſpecially mercury, and beautiful agates.

[6] Lameth. Theo. de la Ter. iv. 384. [7] Ibid.

which, in the opinion of eminent naturaliſts, indicate ancient volcanoes; but as theſe ſuppoſed appearances conſiſt chiefly of baſaltic columns, and elevations, the beſt judges conſider them as having no claim to a volcanic origin. This ſubject remains dubious. The aſſumed lavas may be particular ſtones in a ſtate of decompoſition. Yet the numerous exiſting volcanos in South America, ſuppoſed by many to have been a more recent continent, will compel the impartial enquirer, who will ſhun any excluſive ſyſtem, to allow that many extinct volcanoes may exiſt; but he never will grant that baſaltic columns afford the ſmalleſt preſumption of a volcano, as they rarely appear in the neighbourhood of exiſting volcanoes, and are ſometimes found reſting on coal, which in caſe of fire muſt have been totally conſumed. The rocks of Puy, Axpailli, and Polignac, riſe in ſudden and groteſque forms; but theſe appearances are ſometimes aſſumed even by granite, as may be obſerved in Cornwall. The baſaltic mountains of the ancient province of Auvergne are likewiſe too extenſive to be produced by a ſingle volcano, and a chain of volcanos would be too bold even for conjecture. The northern part of the chain is ſtyled the Puy de Dome, while the ſouthern is called that of Cantal[8]. The Monts D'Or form the centre, and are the higheſt mountains in France. The chief elevation is that of the Puy de Sanſi, which riſes about 6,300 feet above the level of the ſea, while the Puy de Dome is about 5000, and the Plomb du Cantal, the higheſt of that part, is about 6,200 feet. Near the Puy de Sanſi is l'Ango, that gigantic mountain, and Ecorchade a ſhattered and wrecked elevation. The Plomb du Cantal is alſo accompanied by bold rivals, as the Puy de Griou, le Col-de-Cabre, le Puy Mari, and the Violent. This enormous aſſemblage of rocks covers an extent of about 120 miles, and according to the French authors is chiefly baſaltic. The Puy de Sanſi is capped with almoſt perpetual ſnow, followed in the deſcent by naked rocks and ancient pines: from its ſide iſſues from two ſources, the river Dordogne, and many pictureſque caſcades devolve amidſt baſaltic columns[9]. On the 23d of June, 1727, Pradines, a village on the ſlope of one of theſe mountains, was totally overwhelmed by its fall, the whole mountain with its baſaltic co-

MOUNTAINS.

[8] Voy. dans les depart. Cantal, p. 5. [9] Ib. p. 13.

Mountains. lumns rolling into the valley. The inhabitants were fortunately engaged in the celebration of midſummer eve, around a bonfire at ſome diſtance [10]. Theſe mountains are in winter expoſed to dreadful ſnowy hurricanes, called *acirs*, which in a few hours obliterate the ravines, and even the precipices, and deſcending to the paths and ſtreets, co fine the inhabitants to their dwellings, till a communication can be opened with their neighbours, ſometimes in the form of an arch under the vaſt maſs of ſnow. Wretched the traveller who is thus overtaken. His path diſappears, the precipice cannot be diſtinguiſhed from the level; if he ſtand he is chilled, and buried if he proceed; his eye-ſight fails amidſt the ſnowy darkneſs; his reſpiration is impeded; his head becomes giddy, he falls and periſhes. In ſummer, thunder ſtorms are frequent and terrible, and accompanied with torrents of large hail, which deſtroy the fruits and flocks, which for ſix months paſture on the mountains, guarded by ſhepherds, who have temporary cabins of turf and reed, ſtyled *burons*.

Pyrenees. The Pyrenees remain to be deſcribed. This vaſt chain, known and celebrated ſince the days of Herodotus, may be conſidered with equal juſtice as belonging either to France or to Spain; but as the moſt productive and intereſting parts are on the ſide of France, and her literati have exerted themſelves in the deſcription, while thoſe of Spain have been ſilent, it ſeems at leaſt equally proper to introduce the delineation here, which ſhall be chiefly derived from the recent accounts of Ramond and Lapeyrouſe [11]. To the ſurprize of naturaliſts, the Pyrenees have been found to preſent calcareous appearances, and even ſhells, near or upon their higheſt ſummits, which are in the centre of the chain. Mont Perdu is conſidered as the higheſt elevation of the Pyrenees, aſcending above the ſea 1751 French toiſes, or about 11,000 feet Engliſh. The Canigou formerly uſurped that honour, though it exceed not 1440 toiſes. Other noted heights are Tuccarroy, Mar-

[10] Voy. dans les Depart. Cantal. p. 24. One vaſt block of ſtone, 90 feet long and 26 thick, being too heavy to roll ſunk vertically, and the ſhock ſeemed an earthquake even at the diſtance of a league. Another mountain is ſaid to have recently ſunk and diſappeared in the S. of France.

[11] Journal des Mines, No. 37, p. 35.

boré,

boré, the pic de Midi, the pic d'Arni, the Niege Veille, the Vigne Mole, La Breche de Roland, &c.* The Pyrenean chain appears at a diſtance like a ſnowy ridge, preſenting the ſegment of a circle fronting France, and deſcending at each extremity till it diſappear in the ocean and Mediterranean[42]. Thus at St. Jean de Luz only high hills appear, and in like manner on the eaſt, beyond the ſummit Canigou, the elevations gradually diminiſh. The higheſt ſummits are crowned with perpetual ſnow. Blocks of granite are interſperſed with vertical bands, argillaceous and calcareous, the latter primitive or ſecondary, and ſupplying the marbles of Campan and Antin, of beautiful red ſpotted with white, though the general mountain maſs be grey. To the S. and W. the Pyrenees preſent nothing but dreadful ſterility, but on the N. and E. the deſcent is more gradual, and affords frequent woods and paſtures. Beſides the dreadful fall of rocks, undermined by the waters, they are expoſed to Lavanges, or the impetuous deſcent of vaſt maſſes of ſnow, called Avalanches in Swiſſerland, and have their glaciers and other terrific features of the Alps. PYRENEES.

According to Ramond[43] the very ſummit of mount Perdu abounds with marine ſpoils, and muſt have been covered by the ſea; an obſervation confirmed by Lapeyrouſe. This mountain is of very difficult acceſs, as the calcareous rock often aſſumes the form of perpendicular walls, from 100 to 600 feet in height; and the ſnows, ice, and glaciers, encreaſe the difficulty; nor did theſe naturaliſts attain the ſummit, though they could obſerve that the rock correſponded in form and nature with thoſe which they aſcended. A ſingular feature of the Pyrenees conſiſts of what are called *houles*, or walls diſpoſed in a circular form. Near the ſummit of Mont Perdu is a conſiderable lake, more than 9000 feet above the level of the ſea, which throws its waters to the eaſt into the Spaniſh valley of Beouſſa; and which the travellers conſider as a proof that Mont Perdu really belongs to Spain, and that Tuccarroy forms the boundary. The beſt maps of the Pyrenees are Mont Perdu.

* See in the ſame Journal, No. 46 p. 757, an eſtimate of other Pyrenean elevations.

[42] Voy. dans les Dep. No. 67, p. 4. [43] Journ. des Min. ut ſupra.

Mont Perdu.

erroneous, as this lake has no connection with the noted caſcades of Marboré, which flow from another lake to the weſt; and Lapeyrouſe has pointed out other groſs miſtakes in the topography of this intereſting diſtrict. He adds that it is probable that the ſole acceſs to the ſummit of Mont Perdu will be found on the ſide of Spain, there being three ſummits called by the Spaniards *Las Tres Sorellas*, or the Three Siſters; the higheſt being to the north, and the loweſt on the ſouth, but ſeparated, as would appear, by large glaciers. From this view of the Pyrenees, Lapeyrouſe concludes that there exiſt chains of mountains, in which bands of granite, porphyry, trap, hornblende, and petroſilex, alternate vertically with primitive limeſtone, and are ſo intermingled as to prove a common origin. But in the Pyrenees theſe bands are ſurmounted by ſecondary limeſtone, replete with marine ſpoils, and containing even ſkeletons of animals, ſo that he concludes that the higheſt mountains of the chain muſt have yielded to the fury of the ocean, and that the ſecondary parts alone now exiſt. Mr. Townſend [14] obſerves, that the limeſtone and ſchiſtus feed the vegetation on the N. of the Pyrenees, while the ſouth is barren and conſiſts of granite; while, in fact, mountains are generally barren and precipitous on the S. and W. becauſe the moſt violent rains and tempeſts come from thoſe regions. Yet this brief account of the Pyrenees muſt be cloſed with the obſervation, that while Sauſſure has explained with ſedulous ſkill the ſubſtances which compoſe the Alps, there is no work concerning the Pyrenees of great reſearch, or patient inveſtigation.

Foreſts.

The foreſts of France are numerous and extenſive; and as wood is the general fuel, attention to their growth becomes indiſpenſable. Two of the moſt remarkable are thoſe of Orleans and Ardennes, the former for extent and the numerous troops of banditti who uſed to infeſt its precincts; the latter for ancient fame and events of chivalry. The foreſt of Ardennes extended from Rheims to Tournay, and on the N. E. to Sedan in the preſent department of the Ardennes. To theſe names might be added the foreſt of Fontainbleau, and many others, which here to enumerate would be ſuperfluous, as almoſt every ſeigneur had

[14] Spain, i. 89.

his

his foreſt, in which he paſſed the greateſt part of his life among his brethren the wild beaſts [15]. Forests.

Botany. Notwithſtanding the pains that have hitherto been beſtowed by French naturaliſts in illuſtrating the flora of their native country, it ſtill remains in an imperfect ſtate: particular diſtricts, as the environs of Montpellier, of Lyons, and of Paris, have been ſurveyed with conſiderable accuracy, but many chaſms muſt yet be filled before a comprehenſive hiſtory can be made out of the vegetable productions of France. So great indeed is its extent and ſo various its climate, that probably more than half the European ſpecies of plants may be found within its boundaries. The bleak ſhores of the North, the fertile plains on the Belgian frontier, the rich vales of the Loire, the Rhone, and Garonne, the towering heights of Auvergne, the exterior ridges of the Alps and Pyrenees, the ſunny expoſure of the Mediterranean coaſt, offer ſuch ſtriking differences of ſoil and temperature, as evince at once a moſt abundant catalogue of indigenous plants. That country which produces in full and equal perfection wheat and apples, maize and grapes, oranges and olives, the oak and the myrtle, muſt doubtleſs exceed all other European countries of equal extent in the variety and richneſs of its vegetable treaſures. A bare enumeration of them would occupy more room than can be allotted to them in a work like the preſent. We ſhall therefore only particularize ſuch as are the moſt generally intereſting to the Engliſh reader.

If France be divided by imaginary lines from E. to W. into nearly four equal parts, the moſt northern of theſe diviſions will bear a conſiderable reſemblance in its climate and vegetable produce to the S. of England; the ſecond differs principally from the firſt in exhibiting here and there a few vineyards; in the third, fields of maize begin to make their appearance; and the fourth is diſtinguiſhed from the preceding by intermixing groves of olive trees with its exuberant harveſts, and its overflowing vintages.

The ſouthern and eaſtern provinces of France, being thoſe which

[15] William of Malmſbury ſays that Rufus, the ſon of the Conqueror, eſtabliſhed many foreſts and abodes for the wild beaſts "whom he loved as if he had been their father".

have

Botany. have been the moſt carefully explored, as well as containing the moſt intereſting plants, are chiefly referred to in the following liſt.

The ſpecies belonging to the large family of compound flowers, including nearly the whole of the claſs *Syngeneſia* of Linnæus, are very numerous. Of theſe ſeveral are introduced at preſent into our flower gardens; ſuch are Echinops ſphærocephalus, *globe thiſtle*; Onopordon illyricum, *woolly thiſtle*; Carlina corymbota, racemosa, and lanata, all three ſpecies of the *Carline thiſtle*, and natives of *Provence*; Atractylis cancellata, *diſtaff thiſtle*; ſeveral ſpecies of Centaurea, among others C. benedicta, *bleſſed thiſtle*; Santolina incana, *lavender cotton*; Artemiſia rupeſtris, *mountain ſouthernwood*, and A. abrotanum, *common ſouthernwood*, both of them plentiful on the rocks of Dauphiné and Provence. Tuſſilago and Cacalia alpina, *alpine coltsfoot and Cacalia*, abounding on the mountainous frontiers of Savoy and Piedmont; Catananche cærulea and lutea, *blue and yellow Lion's foot*; After Alpinus and amellus, *Michaelmas daiſy*. A few eſculent vegetables that grow wild in Languedoc and Provence, but are cultivated in our kitchen gardens, arrange themſelves under this claſs; for inſtance, Cynara ſcolymus, *artichoke*; Tragopogon porrifolium, *ſalſafy*; and Scorzonera Hiſpanica, *ſcorzonera*. Two or three are uſed in medicine, ſuch as Tanacetum balſamita, *coſtmary*; Arnica montana, *leopards-bane*; Anthemis pyrethrum, *pellitory of Spain*, found in the neighbourhood of Montpellier.

The cucumber, the melon, the gourd, and other kindred genera, though cultivated largely and with great eaſe in the South of France, are yet natives of hotter climates; only one of this natural family, the Momordica elaterium, *ſquirting cucumber*, properly belongs to the French flora; it occurs in a truly wild ſtate, on low looſe rocks, in Provence and Languedoc.

Of the ringent or galeated plants, numerous ſpecies are natives of France, not many of which, however, have found their way into Engliſh gardens; the following are almoſt the whole that are in any requeſt for their beauty or uſe, all of which are natives of Languedoc, Provence, or Dauphiné. Acanthus ſpinoſus, and mollis, *prickly and ſmooth acanthus*; Antirrhinum Monſpeſſulanum, *Montpellier ſnapdragon*; Pedicularis

dicularis flammea and incarnata; Origanum Creticum, *Cretan origany*; Melissa officinalis, *baum*; Hyssopus officinalis, *garden hyssop*; Lavandula stœchas, *spike lavender*; Rosmarinus officinalis, *rosemary*; and Salvia officinalis, *garden sage*. BOTANY.

The nearer in general any country is situated to the tropics, the greater is the abundance and beauty of the bulbiferous or liliaceous plants that inhabit it: the South of France is particularly rich in these splendid and fragrant vegetables, several of which have been naturalized in our gardens, and constitute their principal ornament. Of the genus Allium *garlic*, no less than 36 species are natives of France, several of which have been admitted for their beauty into English flower gardens, of these the A. Monspessulanum, *Montpellier garlic*, is perhaps the chief. The large *branched Asphodel*, Asphodelus ramosus, a flower of great beauty and poetic fame, is by no means uncommon in Provence. Hemerocallis fulva, *tawny day-lilly*; Hyacinthus botryoides, *clustered hyacinth*; Ornithogalum pyramidale, *spiked star of Bethlehem*, are all found in the Mediterranean provinces of France, as are also Lilium bulbiferum, pomponium, and martagon, the *orange*, *pompadore*, and *martagon lillies*; Erythronium dens canis, *dog's-tooth violet*; Bulbocodium vernum, *vernal bulbocodium*; Veratrum album, *white hellebore*; Narcissus poeticus and Jonquilla, *Narcissus* and *Jonquil*. The shore of Hieres is adorned by the Pancratium maritimum, *sea daffodil*, growing luxuriantly on the very beach; and on the lower cliffs of the Nicene and Genoese Alps, the gigantic Agave, *American aloe*, now naturalized to the soil and climate, raises her stately flower stem to the height of 20 or 30 feet, and looks down on every herbaceous plant of Europæan origin.

Allied to the bulbiferous are the tuberous rooted plants with sword-shaped leaves, several species of which are found in France; the most beautiful and worthy of notice are Gladiolus communis, *corn flag*; abundant in the cultivated lands of the middle and southern provinces; the Iris Germanica, *large purple fleur de lis*, in Alsace and on the German frontier; and Iris pumila and maritima, *dwarf and sea fleur de lis*, two elegant little plants that are occasionally met with in Provence and Languedoc.

Of

Botany. Of the papilionaceous plants that are natives of this country, ſeveral deſerve notice for their uſe or ornament. Lathyrus tuberoſus, a vegetable of the pea kind, grows wild in Alſace, and is cultivated in many parts of France for its large eſculent tuberous roots; Lupinus varius, the *great lupin*, varying with blue, white, or fleſh coloured bloſſoms, and Cicer arietinum *chick pea*, are met with in the ſouthern provinces growing ſpontaneouſly, but are more frequently cultivated in large fields as food both for cattle and man; in England the former is conſidered merely as an ornamental plant, and is found in every flower-garden. Trigonella fœnumgrecum, *fenugreek*, eſteemed for its medicinal virtues, and Aſtragalus tragacantha, *tragacanth vetch*, ſo named from the gum that it yields, are both natives of Provence and the vicinity of Montpellier. Many of our moſt ornamental ſhrubs belong to this claſs, ſuch as Cytiſus Laburnum *great Laburnum;* Cytiſus nigricans, *black cytiſus*; Collutea arboreſcens, *bladder ſenna*; Anagyris fœtida, *ſtinking bean trefoil*, and Spartium junceum, *Spaniſh broom.*

Several ſucculent plants of the ſame natural claſs with the Sedum, are found on the dry rocks on the Spaniſh and Swiſs frontiers; of which a few have been introduced into our gardens, viz. Sedum anacampſeros and villoſum, *ever-green orpine*, and *hairy ſedum*; Sempervivum, globiferum, and arachnoideum, *hen and chicken ſedum*, and *cobweb ſedum.*

The claſs Pentandria of Linnæus contains ſeveral well-known plants that occur native in France, ſome of which have been introduced into our gardens and ſhrubberies; ſuch are Primula villoſa and auricula, *hairy primroſe* and *auricula;* Androſace maxima and carnea, *greater* and *fleſh-coloured Androſace*, all found wild on the mountains of Provence; Lonicera cœrulea, *blue berried honey-ſuckle*; Lycium Europæum, *box-thorn*; Nerium oleander, *roſebay oleander*; Campanula grandiflora and ſpeculum, *great flowered campanula* and *Venus's looking-glaſs*; Rhamnus paliurus and alaternus, *Chriſt's thorn* and *alaternus;* Tamarix Gallica and Germanica, *German and French tamariſk.* Others of this claſs deſerve notice for their uſe in various arts, and in medicine, as Piſtachia terebinthus, *Chio turpentine tree*, P. lentiſcus, *maſtich-tree*; Celtis auſtralis, *nettle-tree*; Rhamnus infectorius, the berries of which are uſed in dyeing

by the name of *French berries* or *graines d'Avignon*; Anchuſa tinctoria, *alkanet* another dyeing drug; Rhus cotinus and coriarea, *common* and *Venetian ſumach*, the moſt powerful vegetable aſtringents, and largely applied to leather dreſſing and dyeing; Salſola ſoda, *glaſs wort*, a plant growing on the ſhore of the Mediterranean, from which the Barilla of commerce is prepared. Some eſculent plants alſo belong to this claſs, which, if not ſtrictly natives of France, have at leaſt been long naturalized to the ſoil and climate; theſe are Ceratonia Siliqua, *carob-tree*; Piſtachia Narbonnenſis, *piſtachia nut-tree*, Rhamnus zizyphus, *jujube-tree*. Botany.

But few ſpecies of the French flora need be mentioned under the claſs Decandria Linn. The *fraxinella*, Dictamnus albus; the *yellow* and *Narbonne flax*, Linum flavum and Narbonnenſe: the *ſweet William*, *Deptford pink*, and *carnation*, Dianthus barbatus, armeria, and caryophyllus; the *ferruginous Rhododendron*, R. ferrugineum; and *the Strawberry ſaxifrage*, Saxifraga cotyledon; are adopted into our flower gardens: the *Rue*, ruta graveolens; and *Storax-tree*, Styrax officinalis, the former a native, and the other naturalized at Hieres, are uſed in medicine.

Many of the moſt beautiful plants of the claſſes polyandria and icoſandria are to be met with wild in France; ſuch are Chelidonium corniculatum *ſcarlet-horned poppy*; Pæonia officinalis and tenuifolius, *common and narrow-leaved peony*; Ranunculus aconitifolius, *mountain ranunculus*; Adonis autumnalis, æſtivalis, and vernalis, *pheaſant's eye*; Thalictrum aquilegifolium, *feathered columbine*; Aquilegia alpina, *mountain columbine*; Nigella damaſcena and arvenſis, *fennel-flower*; Helleborus niger and hyemalis, *Chriſtmas roſe and winter aconite*; Anemone alpina, hortenſis, and hepatica, *Alpine and ſcarlet anemone and hepatica*; Delphinium elatum, *bee larkſpur*; Aconitum napellus, *monkſhood*; ſeveral trees and ſhrubs both ornamental and uſeful, alſo arrange themſelves under one or other of theſe claſſes. Myrtus communis, the *broad leaved myrtle*, grows with great luxuriance along the whole of the Mediterranean coaſt; Capparis ſpinoſa, the *Caper-buſh*; Ciſtus laurifolius and Monſpelienſis, the *laurel-leaved* and *Montpellier ciſtus*, three low ſhrubs of exquiſite beauty, hang from the ſummits, or cluſter round

Botany. the ſides of the low rocks about Toulon, and Montpelier. In the ſame vicinity alſo are found Roſa Gallica, the *Provence roſe*, Meſpilus pyracantha, the *pyracantha*, and Punica granatum, the *pomegranate tree*.

A few trees and ſhrubs remain to be mentioned, which will be more conveniently taken together than ſeparated into their botanical claſſes; theſe are quercus ægilops, and cerris, the *greater and leſs prickly-cupped oak*, two very fine ſpecies that are found in plenty about Paris and Fontainbleau; quercus coccifera, ſuber, and ilex, the *kermes oak*, *cork-tree*, and *evergreen ilex*, growing chiefly in the ſouthern provinces; juniperus ſabina, oxy-cedrus, and phöenicea, the *ſavine*, the *brown and yellow berried juniper*; oſyris alba, *poet's caſſia*; phillyrea latifolia, and anguſtifolia, *broad and narrow leaved phillyrea*; and erica arborea, *tree-heath*; all of them natives of Provence, Dauphiné, and Languedoc.

Zoology. The horſes of France do not appear to have been celebrated at any period; and it is well known that the ancient monarchs were drawn to the national aſſemblies by oxen. Before the late commencement of hoſtilities, many Engliſh horſes were imported for the coach and ſaddle. The beſt native horſes are, for draught, thoſe of Normandy; for the ſaddle, thoſe of the Limoçin, which have been recently improved by croſſing the breed with the Arabian, Turkiſh, and Engliſh.[16] But the greater number of horſes in France conſiſts of Bidets, ſmall animals of little ſhew, but great utility. The rich paſtures of the north ſupport numerous herds of cattle, yet an able judge[17] aſſerts that there is not in the kingdom one tenth part of what there ought to be; a radical error of French agriculture being the neglect of graſs, and the conſequent want of manure. The cattle of Limoges, and ſome other provinces, are of a beautiful cream colour. The beef at Paris Mr. Young prefers to that of London. The ſheep are ill managed, having in winter only ſtraw, inſtead of green food as in England.[18] The conſequences are poor fleeces, rarity of ſheep, ſo that the poor are forced to eat bread only, and large quantities of wool are imported. Of ferocious animals the moſt remarkable are the wild boar and the wolf;

[16] Young's France, ii. 55. [17] Young, ii. 52. [18] Young, i. 430.

the

the ibex, rock goat, or bouquetin, is found on the Pyrenees and the Alps, being a large goat with very long and ſtrong horns. The chamois belongs to the claſs of antelopes, having ſmall ſtrait horns. Among the animals almoſt peculiar to France, may be mentioned the Veſpertilio ſerotina, Pipiſtrilla, Barbaſtella, the Otis tetrax, the Chadrius lutreus, &c. Zoology.

Gold mines anciently exiſted in the S. of France, and ſome of the rivulets ſtill roll down particles of that metal. The ancient Gallic coins are however of a baſe gold mingled with ſilver, being the metal ſtyled by the ancients electrum. And ſuch it is probable are the particles of gold which are found in the ſands of the Rhone, between Tournon and Valance, and in thoſe of the Ardeche.[19] France can, however, boaſt of the ſilver mines at St. Marie-aux-Mines in Alſace, and at Giromagny in the department of the Upper Rhine, near the mountains of Voſges, alſo a part of ancient Alſace. The ſame diſtrict contains mines of copper, a metal not unfrequent in the departments of the Alps, and thoſe of the Loire, the Lozere, and the Ardéche. Some appearances indicate tin in Bretagne, and even in the centre of France. Two thirds of the lead of France are from Bretagne, particularly the mines of Poullaoven and Huelgoet; mines of lead alſo occur in the maritime Alps, and in the mountains of Voſges, in the departments of Lozere, Ardéche, &c. &c. Antimony occurs in the Ardéche, and in the department of the Allier, at Allemont in former Dauphiné, and in that of Mont Blanc, if that acquiſition ſubſiſt. There are noted mines of calamine near Aix la Chapelle, if this may be conſidered as French territory. Manganeſe occurs in the department of the Loire, and in that of the Voſges; and at Romaneche, in the department of the Saone, and Loire; it is alſo found near Perigou, whence it uſed to be called pierre de Perigord: Cobalt is another product of Alſace. The new acquiſitions in Savoy preſent ſome mercury; and there is a mine at Menildot.* Mineralogy. Gold. Silver. Copper. Lead.

[19] Journ. des Mines, Ann. vi. p. 662.

* The duchy of Deux Ponts, a valuable acquiſition of France on the weſt of the Rhine, has long been celebrated for mines of quickſilver. The mountains of Voſges are chiefly horizontal ſtrata of red ſand-ſtone. Near Gelheim, to the weſt of Wurms, the chain is interrupted; but afterwards riſing ſpreads in two branches, that to the W. being called Weilrich, that to the E. Donnerſberg.

MINERALOGY.

Iron. Iron, that moſt important and univerſal of metals, is found in abundance, particularly in ſome of the northern departments. In 1798 it was computed that there were 2000 furnaces, forges, &c. for the working of iron and ſteel.[20]

Coal. The coal mines of France were at the ſame time eſtimated at 400, conſtantly wrought; and 200 more capable of being wrought. Of theſe coal mines many occur in the provinces which formerly belonged to Flanders, and in the departments of Boulogne, and Lamanche. Coal is alſo not unfrequent in the centre and ſouth of France. Nearly allied to coal is jet, an article formerly of great conſumption, chiefly in Spain, where it was made into roſaries, croſſes, buttons for black dreſſes, &c.[21] France was from time immemorial in poſſeſſion of this branch, which was centered in three villages in the department of the Aude, in the S. W. of ancient Languedoc. In 1786 it employed more than 1200 workmen; and the annual ſupply of the mineral was computed at a thouſand quintals, or hundred weight. Beſides exports to Germany, Italy, and the Levant, Spain imported theſe jet manufactures to the annual amount of 180,000 livres. Latterly jet was, in return, imported from the mines of Arragon in Spain, to ſupply this manufacture. That in the S. of France is in beds like coal, but not continuous, and was ſometimes rendered impure by a mixture of pyrites: it is commonly

Donnerſberg. (Journal des Mines, No. 6. p. 70.) The mountains which contain the mercury embrace a diſtrict of ten or twelve leagues in length, S. to N. from Wolfſtein to Cruznach, and ſeven or eight leagues in breadth, being of a reddiſh brown or grey ſand-ſtone. In this territory, among numerous mines of quickſilver, are thoſe of Stahlberg, and Donnerſberg, which have been explored for many centuries. The gangart is ſteatite, barytes, argillaceous rock, &c. The adjacent part of the Palatinate alſo contains ſimilar mines, particularly in the mountain of Potzberg near the river Glan, compoſed of a kind of ſubſtance like kaolin, of minute particles of quartz, mica, and clay. The pits in Potzberg are about forty. At Wolfſtein are other mines of the ſame rare mineral. The annual product of theſe mines may be eſtimated at 67,200 pounds of mercury; and the revenue, after deducting expences, at 127,517 livres. Near Trarbach, at the extremity of the weſtern branch of the Voſges, there are mines of copper and lead, with ſome ſilver. (Ib. xi. 43, &c.) About ſix miles to the ſouth of Trarbach, the mountain Eckelsberg diſplays ſingular picturеſque walls of quartz, running from E. to W., the intermediate ſchiſtus being decayed. Many parts of the Hunzruck, or region between the Mozelle and the Nahe, are covered with blocks of quartz.

[20] Journ. des Mines, Ann. vii. p. 171. [21] Ibid. Ann. iii. No. 4. p. 41.

monly found in a kind of ruſty earth, of an aſh colour; and ſometimes occurs in maſſes of the weight of 50lbs, about five or ſix fathom under the ſurface. MINERALOGY.

Beſides excellent freeſtone, the environs of Paris contain abundance of gypſum, which at Mont Martre is found curiouſly cryſtallized. Alum is found in conſiderable quantities at Aveyron. The Pyrenees in particular ſupply beautiful marbles; and the extenſive and various territories of France afford ſeveral precious ſtones, as the aqua marina, the hyacinth, the chryſolite, and even the ſapphire.

The chief mineral waters of France are thoſe of Barrège, Banière, Forges, Vichi, Bourbonne, Balaruc, Plombieres. The warm baths of Barrège, in particular, at the foot of the Pyrenees, have been long celebrated, and there the Queen of Navarre lays the ſcene of her tales. The baths of Bagneres are in the ſame neighbourhood. Mineral Waters.

Among the natural curioſities of France, or thoſe objects which, in an enlightened age, attract particular obſervation, may be named the ſingular mountains of Auvergne already mentioned, and which ſtruck even Mr. Young as volcanic; but as he refers to the work of Faujas de St. Eond, it is probable that he was miſled by that theoretic writer. The ſcenery here is however richly deſerving of attention; and has eſcaped moſt travellers, who have purſued the dull route to Dijon, inſtead of this variegated road which may conduct them by Niſmes, and Aix, into Italy. The fountain of Vaucluſe, celebrated by Petrarca, is a river ſpringing ſuddenly from a cavern at the bottom of a perpendicular rock. Nor muſt the noted plain of La Crau be forgotten, which lies in Provence, not far from the mouth of the Rhone. This is the moſt ſingular ſtony deſert that is to be found in France, or perhaps in Europe[22]. The diameter is about five leagues, and the contents from 20 to 25 leagues ſquare, or about 150,000 Engliſh acres. It is entirely compoſed of ſhingle, or round gravel, ſome of the ſtones as large as the head of a man, and the ſhingle of the ſea-ſhore is not more barren of ſoil. Beneath is a ſmall mixture of loam with fragments of ſtone. In the winter there are ſcattered piles of graſs, which, from the vaſt extent of Natural Curioſities.

[22] Young, i. 379.

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Natural Curiosities.

the ſpace, paſture a conſiderable multitude of ſheep. Mont St. Michael in Normandy is another natural curioſity, being a ſolitary hill riſing near the ſea, like St. Michael's mount in Cornwall. In general however France, being moſtly a plain country, does not preſent much ſingularity of feature; and the ſcenes of the Cevennes and Pyrenees have been little explored by travellers, who paſſing to the chief cities generally ſee only the moſt unintereſting parts of the country. Even Bretagne, it is probable, may preſent many ſingularities, which may have eſcaped the attention of the French themſelves, who do not appear to be much impreſſed with ſuch objects. They have however commemorated with ſome attention various natural caves, which in France, as in other countries, preſent themſelves in calcareous rocks. One near the village of Beaume, about ſix leagues from Beſançon, is remarkable from its containing a glacier; and it was fabulouſly reported that the ice increaſed during the ſummer, and diminiſhed in the winter, till recent obſervations evinced, as was to be expected, the contrary poſition.[23] This cave is at the bottom of a ſmall valley in the midſt of a thick foreſt. The mouth, which is level with the vale, is forty-five feet broad; and after a long and ſteep deſcent appears a hall of 100 feet high, whence there is a paſſage to the chamber containing the glacier, the deſcent to which is by a ladder of 40 feet. In this triangular cavern are vaſt ſtalactites of ſolid ice, which are ſometimes nearly joined by pillars of the ſame material, riſing from a magnificent pedeſtal on the floor. While the thermometer of Reaumur, placed without, was at 20 degrees and a half, it here fell to one and three quarters. This phænomenon may be partly owing to the direction of the aperture of the cave, which fronts the north.

The noted wonders of Dauphinè compriſe many Alpine ſcenes. In the department of Ardéche, on the other ſide of the Rhone, are ſeveral natural curioſities, ſuch as the bridge of rock, under which the river Ardéche paſſes, near the village of Chames, the grottoes of Vallon, the gulph of Goule, with many ſingular baſaltic columns, cauſies, &c. and what the French authors ſtyle craters of volcanoes.[24]

[23] Journ. des Mines, xxi. 65.

[24] Ibid. Ann. vi. p. 626.

The

The iſles around France are ſo ſmall, and unimportant, that they would ſcarcely be deſerving of notice, were it not for events that have taken place during this war. The iſle of Corſica muſt however be excepted, if it continue to be regarded as a part of the French territory. From the dominion of Carthage, this iſle paſſed under that of Rome, and was for ſome time ſubject to the Saracens of Africa. In the time of the cruſades it was aſſigned to the republic of Piſa, and was afterwards conquered by the Genoeſe. In 1736 the malcontents rejected the Genoeſe yoke, and choſe a German adventurer for their king. After many ineffectual ſtruggles Corſica was ceded to the French, who continue to maintain a dubious authority. The Romans did not certainly highly eſteem this iſland, when they ſelected it as a place of exile; and according to a modern French geographer "the air of Corſica is thick and unwholeſome, the territory full of mountains, of little fertility, and ill cultivated: the vallies nevertheleſs produce corn, and the hills wine, fruits, and almonds."[25] This plain account ſeems preferable to the exaggerations of party writers in England, who ſwell the advantages of this iſland; but it is probable that, as they aſſert, ſmall veins of ſilver may be found, and that the mountains may afford granite, porphyry, jaſper, &c. which however abound in the Highlands of Scotland.

FRENCH ISLES.

Corſica.

The iſles called Hyeres, near Toulon, have been equally magnified by a female traveller. Mr. Young informs us that they have a barren and naked appearance, and only preſent ſome melancholy pines.[26] They however contain ſome botanic riches, and may claim the fame of being Homer's iſle of Calypſo.

On the weſtern coaſt firſt occurs the iſle of Oleron, about fourteen miles long by two broad, celebrated for a code of maritime laws iſſued by Richard I, king of England, of whoſe French territory this iſle conſtituted a portion. To the N. is the iſle of Ré, oppoſite Rochelle, noted for an expedition of the Engliſh in the ſeventeenth century, deſcribed by Lord Herbert of Cherbury. Yeu is a ſmall and inſignificant iſle, followed by Noirmoutier, which became remarkable in the war of La Vendeé, being about eight miles long and two in breadth. Belliſle

[25] La Croix, i. 528. [26] France, i. 195.

French Isles.

has been repeatedly attacked by the Engliſh: it is about nine miles long and three broad, ſurrounded by ſteep rocks, which, with the fortifications, render the conqueſt difficult. The iſle of Uſhant, or Oueſſant, is remarkable as the furtheſt headland of France, towards the weſt, being about twelve miles from the continent, and about nine in circumference, with ſeveral hamlets, and about 600 inhabitants. Several other ſmall iſles may be paſſed in ſilence, but thoſe of St. Marcou, about ſeven miles S. E. of La Hogue, may be mentioned as in our poſſeſſion: they received their name, it is believed, from a Norman Saint, Marcoul, abbot of Nantouille, who died in 558.

NETHERLANDS.

Names.—Extent.—Original Population.—Hiſtorical Epochs —Antiquities.—Religion.—Government.—Laws.—Population.—Revenue.—Political Importance and Relations.—Manners and Cuſtoms.— Language.—Literature.—Education.—Univerſities.—Cities and Towns.—Edifices.—Inland Navigation —Manufactures and Commerce.—Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

THOSE provinces of the Netherlands which were formerly ſubject to the houſe of Auſtria, have been recently annexed to the French dominions. As this fertile territory may probably continue to be united to France, it became neceſſary to uſe as much brevity as poſſible in the deſcription, that it might not, in that caſe, be diſproportionate to the account of that country.

The Netherlands in general were anciently known by the name of Belgic Gaul, the chief inhabitants of this part being the Menapii, the Tungri, the Nervii, and the Morini. After the irruption of the Franks, this country formed part of Neuſtria, or the new kingdom, (the ancient kingdom of the Franks being on the E. of the Rhine,) partly belonging to the province of Flandria, and partly to that of Lotharingia, or Lower Lorrain[1]. In the middle of the ninth century aroſe the powerful houſe of the earls of Flanders; and the counts of Hainaut commence about the ſame epoch. The dukes of lower Lorrain and Brabant NAMES.

[1] D'Anville, Etats formès en Europe, 70. &c.

Names. are little known till the end of the tenth century. Theſe and other great inheritances gradually fell under the power of the dukes of Burgundy, who in the fifteenth century enjoyed dominions worthy of the regal title. With the heireſs of Burgundy the Netherlands paſſed by marriage to the houſe of Auſtria.

Extent. The length of the Auſtrian Netherlands, computed from the eaſtern limit of Luxembourg, to Oſtend on the ocean, may be about 180 Britiſh miles; and about 120 in breadth, from the northern boundary of Auſtrian Brabant to the moſt ſouthern limit of Hainaut. The extent is computed at 7,520 ſquare miles, with a population of 1,900,000. But if the French territory be extended to the Rhine, and thus include large portions of the German circles of Lower Rhine, and Weſtphalia, the territory and population may be increaſed by at leaſt one third.

Original Population. The original population was Celtic, but was ſupplanted by the Belgæ, a German colony, afterwards vanquiſhed by the Franks, a kindred nation. The progreſſive geography may be traced with great certainty from the time of Julius Ceſar through the later Roman writers, and the Francic hiſtorians of the middle ages. The chief hiſtorical epochs are

Hiſtorical Epochs. 1. The events while the Romans held Gaul.

2. Under the Merovingian race of French kings.

3. The ancient earls of Flanders, and Hainaut, and other potentates who ſhared theſe territories.

4. The dukes of Burgundy. During theſe two epochs the Netherlands became the great mart of commerce in the weſt of Europe, and were diſtinguiſhed by opulence, and the arts.

5. The Auſtrian domination, accompanied with repeated unſucceſsful ſtruggles for freedom. The ſeven United Provinces having, however, eſtabliſhed their liberty, the commerce, and proſperity of the ſouthern regions quickly paſſed to their northern neighbours.

Antiquities. The remains of Roman art are little memorable, and the chief antiquities conſiſt in grand eccleſiaſtical, and civil monuments of the middle ages, when theſe regions concentrated a great part of the wealth of Europe, and abounded in excellent artiſts of all deſcriptions.

Religion. The religion of the Netherlands is the Roman Catholic; and till the French revolution, the inhabitants were noted for bigotry, a great part

of the wealth being in the hands of eccleſiaſtics. The ancient cultivation of the arts had alſo a ſhare in this attachment, the Catholic ſyſtem being naturally endeared by this connexion, while the Reformation has chiefly ſucceeded in thoſe northern regions where the progreſs of the arts had not yet captivated the affections of the people. The metropolitan ſee was the archbiſhoprick of Mechlin, or Malines. The biſhopricks were thoſe of Bruges, Antwerp, Ghent, &c., in number nine or ten. The government and laws had ſome features of what was formerly deemed freedom; but the decline of commerce having leſſened the conſequence of the cities and burgeſſes, this liberty became the monopoly of the nobles, and clergy, who often oppoſed the will of the ſovereign, when exerted in the moſt beneficial manner for the good of the community. The *Joyeuſe entreé* was the magna charta of the Netherlands, a conſtitutional bond of national privileges. Yet the ariſtocracy was mild, and the people in general more happy and contented, than they are likely to prove under the tyranny of freedom.

Religion.

Government and Laws.

The population being computed at 1,900,000, and the ſquare extent at 7,520 miles, there will be 252 inhabitants to the ſquare mile, while France yields only 174. Under the Auſtrian power, the revenue of the Netherlands ſcarcely defrayed the expences of government, and the various extortions of the French rulers cannot afford ſufficient data to compute an equitable and laſting revenue. The political importance and relations of theſe provinces have been long immerged in thoſe of the houſe of Auſtria. Their trueſt intereſt would have been to have entered into the Dutch confederacy, and thus have eſtabliſhed on a broader baſis a commercial power, which in ſtrict alliance with England might have defied the encroachments of French ambition: nor muſt the difference of religion be conſidered as the chief obſtacle to ſo deſirable an event, but rather the narrow policy of the Dutch, who by blocking up the Scheld, and other acts of outrage, excited indelible enmity, where they ought to have ſecured laſting friendſhip. But commercial monopoly, which ſolely conſiders preſent gain, is of all others the moſt unfit ſpring of government, which ought to regard the advantage of diſtant poſterity. In the preſent inſtance it led the Dutch

Population.

Revenue.

Political Importance and Relations.

Political Importance, &c. to the annihilation of their own power and proſperity; while, if the commerce of the ſouthern ſtates had continued uninterrupted, mutual intereſts might have formed a broad baſis of laſting ſecurity.

Manners and Cuſtoms. The manners and cuſtoms of the Netherlands partake of thoſe of their neighbours, the Dutch and French, the phlegm of the one being tempered by the vivacity of the other. The lower claſſes were fond of religious pageantry, and much addicted to the ſuperſtitious obſervances of the Catholic ſyſtem.

Language. The Flemiſh language partakes of the German, and of the Dutch.

Literature. Theſe provinces boaſt of early literature, after their converſion to chriſtianity in the ſeventh century, in various chronicles, and lives of ſaints; but in modern times they have rarely produced writers of great talents. The native language remains uncultivated, and the chief authors have uſed the Latin or the French. Froiſſart was born at Valenciennes, in French Flanders; Philip de Comines at the town ſo called, about eight miles to the N. of Liſle, and ſituated in the ſame diviſion. Lipſius, a man of conſiderable erudition, was born near Bruſſels. But in general the Southern Netherlands are more eminent in artiſts; and the United Provinces in literary characters.

Education. The education was neglected as in moſt Catholic countries, where the Jeſuits in vain attempted to bring it to a level with that of the Proteſtant ſtates.

Univerſities. The univerſities, which in no country are of equal importance with the ſchools, were, however, numerous, conſidering the extent of the country. Excluſive of Tournay (Dornick) which has been long ſubject to the French, there were others at Douay, and St. Omer, much frequented by the Engliſh Catholics; and one of ſtill greater celebrity at Louvain, founded in 1425. The illuſtrious profeſſors, commemorated with ſuch applauſe by Guicciardini, nephew of the great hiſtorian, who publiſhed an ample deſcription of the Netherlands in the ſixteenth century, have been long ſince forgotten, as to poſterity their ſtudies have appeared neither amuſing nor uſeful.

Cities and Towns. One of the chief offices of geography, in ancient and modern times, being to give a ſhort deſcriptive catalogue of the chief cities and towns, in the regions deſcribed, theſe muſt not be wholly omitted even in this

ſhort

ſhort abſtract. The three chief cities in what were called the Auſtrian Netherlands, are Bruſſels, Ghent, and Antwerp. The capital city of Bruſſels ſtill contains about 80,000 inhabitants, and is beautified by a noble ſquare, one ſide of which is occupied with a vaſt guildhall; by numerous churches, and fountains. It is ſituated on the ſmall river Sen, or Senne, which runs into the Dyle and the Scheld. It is known as early as the tenth century, and in the fourteenth was ſurrounded with walls. The imperial palace, the wonted reſidence of the governor of the Netherlands, diſplays conſiderable taſte and magnificence. Cities and Towns. Bruſſels.

Ghent contains about 60,000 ſouls, and the circumference of the walls is computed at 15 miles, as it is built on a number of little iſlands formed by four rivers, and many canals, and includes gardens, and even fields.[2] Some of the ſtreets are large and well paved, but only a few churches now deſerve attention. Ghent.

The inhabitants of Antwerp are computed at 50,000, the ſad remains of great population and proſperity. This city being placed upon the eſtuary of the Scheld, and formerly the chief mart of Flemiſh commerce, there is a ſtrong citadel, erected by the ſanguinary duke of Alva. The harbour was excellent, but beſides the artificial impediments at the mouth of the Scheld, the Dutch fort of Lillo commands the approach. The ſtreets, houſes, and churches are worthy of the ancient fame of the city. The exchange is ſaid to have afforded the pattern for that of London. The churches are decorated with many paintings by Rubens, Vandyke, and other Flemiſh maſters. In 1568 the trade is ſuppoſed to have been at its greateſt height; and the number of inhabitants was computed at 200,000. It ſtill contains a number of the rich deſcendants of the ancient merchants: with ſome commerce, and a few flouriſhing manufactures, particularly of lace and linen. Of the other principal towns, Mons is computed at 25,000 inhabitants; Bruges, and Namur, each at 20,000; Luxembourg at 12,000; Roermond at 10,000; Limbourg at 8,000. Antwerp.

[2] Marſhall, ii. 22.

The

Sea-Ports. The ſea-coaſt of Flanders, the maritime province, conſiſts chiefly of ſandy hills, and downs, and has few inlets, as moſt of the rivers flow into the Scheld. There are however two ports which deſerve particular notice. The Sluys,* called by the French L'Eclues, derives its name from the ſluices, by which the circumjacent country may be laid under water. And a ſimilar circumſtance gives name to Helvoët Sluys, a ſea-port of Holland, ſituated in the iſland of Vorn, about forty miles more to the north. Guicciardini ſays that the haven of Sluys was capable of containing 500 ſhips. The port and population now yield greatly to thoſe of Oſtend. This only other haven on the Flemiſh ſhore has been conſiderably frequented ſince the Scheld was abandoned. The town is ſtill computed to contain 14,000 ſouls, though it ſuffered greatly by the famous ſiege which terminated in 1604, when it was gallantly defended by Sir Francis Vere, at the head of a few Engliſh troops. Many Engliſh families were ſettled here before Oſtend fell a prey to the French.

In general it may be obſerved that, even at the preſent day, every traveller is impreſſed with ſurprize, not only at the number, but the great extent of the Flemiſh cities, towns, and even villages; in which reſpect the Netherlands exceed every country in Europe, only excepting the United Provinces. The chief edifices are the cathedrals, churches, and monaſteries; though a few caſtles belonging to ancient families, or rich merchants, uſed to attract ſome notice: the taſte of the latter buildings being faithfully copied in the Flemiſh landſcapes, and more remarkable for little prettineſs, peaked roofs, fantaſtic ornaments, the muddy moat, and drawbridge, than for grandeur of deſign, or amenity of ſituation.

Edifices.

Inland Navigation. Idle would be the attempt even to enumerate the canals which interſect theſe provinces in all directions. Some of them date even from the tenth century, and the canal from Bruſſels to the Scheld is of the ſixteenth. Other important canals extend from Ghent, Antwerp, Oſtend, and other cities, and towns, eſpecially in the weſtern diſtricts; but, under the Auſtrian domination, theſe important means of in-

* Sluys belonged to the United Provinces, but is here mentioned, conſidering the Netherlands to the Rhine as an appendage of France. Nieuport, a little fiſhing town, ſcarcely deſerves notice.

tercourſe

tercourſe were ſhamefully neglected, and it will require much time and labour to reſtore them to their former utility.[3] Inland Navigation.

The manufactures and commerce of the Netherlands, for a long period ſuperior to any in the weſt of Europe, have ſuffered a radical and total decline, owing partly to the other powers entering into competition, and partly to the eſtabliſhment of freedom in the United Provinces, whence Amſterdam aroſe upon the ruins of Antwerp. What little commerce remains is chiefly inland to Germany, the external employing very few native veſſels. The Eaſt India Company eſtabliſhed at Oſtend was ſuppreſſed by the jealouſy of England, and other powers; and the chief commerce was afterwards carried on by the Engliſh eſtabliſhed in that city. Yet of the manufactures a few fragments remain: Cambray, long ſubject to the French, is ſtill renowned for the cambrics which thence derived their name; as Tournay, or Dornick was anciently famous for the fineſt linens. At Bruges there are ſtill ſome manufactures of broad ſays, baize, and other woollens; conſiderable fabrics of broad-cloth, druggets, ſhalloons, and ſtockings, were conducted at St. Omers, chiefly with wool ſmuggled from England.[4] But the chief manufactures are of tapeſtry, fine linen, and laces, at Mechlin, Bruſſels, Ghent, Antwerp, Louvain, which ſtill enrich the country around, and induce the farmers to cultivate flax, even on the pooreſt ſoils.[5] The Netherlands produce, for home conſumption, abundance of corn, and vegetables; and the coal mines would become important, if the operations were ſkilfully conducted. There is beſides abundance of turf for fuel; with iron, porcelain clay, and other commodities. Manufactures and Commerce.

The climate of the Netherlands conſiderably reſembles that of the ſouth of England, and is more remarkable for moiſture than for warmth; yet the duchy of Luxembourg produces ſome wine, which probably has the auſterity of the Rheniſh, without its ſpirit. The face of the country is in general level, and the ſemblance of hills can ſcarcely be diſcovered, except towards the Eaſt, where a few elevations relieve the eye from the general flatneſs of the other regions. The ſoil is in general rich ſandy loam, ſometimes interſperſed with fields of clay, Climate and Seaſons. Face of the Country. Soil and Agriculture.

[3] Philips, 48. [4] Marſhall, ii. 11. [5] Ibid. 63.

but

Soil and Agriculture.

but more often with large ſpaces of ſand Such has been, even in diſtant ages, the ſtate of agriculture that the Netherlands were long eſteemed the very garden of Europe, a praiſe which they ſtill ſhare with Lombardy and England. No ſtronger proof can be adduced of the advantages, which commerce confers on agriculture, than this country, which evinces that the latter advantage chiefly ariſes from commercial opulence employed in its moſt uſeful direction. The mere farmer can never become opulent, except from the pre-exiſtent benefits of trade; but while he is ſharing in the national wealth thus acquired, it is natural that he ſhould impute his ſucceſs ſolely to his own labours. It muſt readily occur that Lombardy, alſo celebrated for its agriculture, was the country of the ancient bankers of Europe, who returned there to enjoy the fortunes which they had acquired; and that England is pre-eminent in mercantile wealth: ſo that the plain facts are worth a thouſand theories. An accurate obſerver[6] repeatedly praiſes the ſtate of agriculture in the Netherlands, and points out many advantages which it maintained over that of England. The repeated crops of excellent clover, the cole, the turnips, the clean crops of flax, barley, and oats, deſervedly attracted his attention. He remarks that the agriculture has been celebrated for theſe 600 years, ever ſince their commerce and manufactures became eminent; and that they ſtill poſſeſſed the eſſentials of good huſbandry in the deſtruction of weeds and perpetual crops[7]. They commonly uſed four horſes without a driver, the plowman holding the reins, and being equipped with a long whip ſtuck into a ſocket. The plough had wheels, and the furrows were ſhallow, as they did not wiſh to turn up the ſharp and unmanured ſand: on ſome low ſpots, between little eminences, was ſeen abundance of hops, a native and peculiar product adopted in England in the reign of Henry VIII. They never allow the land to lie fallow, regarding the deſtruction of weeds as the ſole advantage of ſuch a practice, which may be equally accompliſhed by crops of turnips, rape, beans, and clover, which not only deſtroy the weeds but enrich the ſoil.

Rivers.

The Netherlands are watered by ſo many rivers and canals, that it will be ſufficient to mention only a few of the chief ſtreams. The

[6] Marſhall, ii. [7] p. 65.

Rivers. Rhine belongs to Germany, paſſing at a conſiderable diſtance to the E. of the frontier; and but a ſmall extent of the Meuſe, or Maas, pervades the county of Namur, in theſe Netherlands. The chief river is the Scheld, which receives two other ſtreams, the Lys, and the Scalpe, the latter near Mortagne, the former near Ghent. All theſe rivers ariſe in the county of Artois, from no conſiderable elevation; and the whole courſe of the Scheld, or French Eſcaut, cannot be comparatively eſtimated at above 120 miles.* The Dyle riſes not far to the N. W. of Namur, and joins the Scheld above Niel, after receiving from the E. the Dermer, the Nette, or Nethe from the N. and the Senne from the S. Moſt of the other rivers yield in importance to the canals, and it would indeed be difficult in many inſtances to determine whether their courſe be the work of nature or art. There is no lake worthy of commemoration.

Mountains. Though there be little ridges of hills in the counties of Namur, and Luxembourg, the traveller muſt proceed to the diſtant banks of the Rhine before he meets with any elevation that can deſerve the name, even of a ſmall mountain. There are, however, ſeveral woods even Foreſts. in the centre of Flanders; and in Brabant is the foreſt of Soigne. Further to the E. and S. are immenſe foreſts, which almoſt pervade Hainaut and Luxembourg, from Valenciennes to Treves, forming ſtriking remains of the ancient foreſt of Ardennes.

Botany. The vegetable productions of the Catholic Netherlands differ in no reſpect from thoſe of Holland, and all the plants that are natives of this country may be met with in the ſandy and marſhy diſtricts of the South-eaſt coaſt of England, except the Gentiana cruciata. A few ſpecies indeed, which are rare with us, are of frequent occurrence in the Netherlands, particularly the Senecio paludoſus, *marſh ragwort*, in ſhallow ditches; Eryngium campeſtre, *field eryngo*, in great plenty by the ſide of the roads; and the elegant Menyanthes nymphoides, *fringed water-lily*, adorning the canals, and other deep low ſtreams.

Zoology. The zoology of the Netherlands affords no remarkable materials. The breed of horſes and cattle is eſteemed for ſize.

* The Scheld properly riſes about eight miles N. of St. Quintin, in the modern department of the Aiſne.

Mineralogy.

So plain a country cannot be ſuppoſed to ſupply many minerals: yet coal, perhaps the moſt precious of them all, is found in ſeveral diſtricts, and the ingenuity of the French has been exerted in an improvement of the operations. In the county of Namur are alſo found lead, and copper; and Hainaut affords iron, and ſlate. From its iron works Luxembourg derives its chief wealth; and the foreſt of Ardennes is ſtill renowned for the metal of war. Marble, and alabaſter are alſo found in the eaſtern diſtricts. There are no mineral waters of much reputation in the Netherlands; but in the neighbouring circle of Weſtphalia are thoſe of Aix la Chapelle, and ſtill nearer thoſe of the Spa, about twenty-ſix Britiſh miles S. E. of the former, and diſcovered towards the beginning of the fourteenth century.

Mineral Waters.

Natural Curioſities.

The natural curioſities of ſo flat a country cannot be ſuppoſed to be numerous, nor have travellers indeed indicated any one object of this kind.

RUSSIA IN EUROPE.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography and preſent Boundaries.—Hiſtorical Epochs and Antiquities.

THE Ruſſian empire is, perhaps, the moſt extenſive that ever exiſted; the length being about 9200 Engliſh miles, and the breadth 2400[1]. But the oriental part preſents vaſts deſarts, and a ſlender population, as will appear in the diviſion of this work appropriated to Aſia. The preſent article muſt be reſtricted to an account of Ruſſia in Europe.

By the final partition of Poland, this diviſion now extends from the river Dnieſter to the Uralian mountains, that grand chain which naturally divides Europe from Aſia, a length of about 1600 miles; and in breadth above 1000 Engliſh miles. The extent is computed at about 1,200,000 ſquare miles.

Even the European part of the Ruſſian empire embraces many ancient kingdoms and ſtates; but the chief name that of Ruſſia ſhall only be here conſidered. Amidſt the grand conflux of nations towards the weſt, which attended the decline and fall of the Roman Empire, the Slavonic tribe of Roſſi eſcaped the obſervation of hiſtory till the ninth century; and it is uncertain whether the term were native, or imported NAMES.

[1] Tooke's View of the Ruſſ. Emp. 3 vols. 8vo. i. p. 6.

Names. by the Scandinavian chiefs who founded the Ruſſian monarchy[2]. In the ſixteenth century, when Ruſſia firſt attracted the obſervation of enlightened Europe, we find that the new appellation of *Muſcovia* had unaccountably paſſed among foreigners from the capital to the kingdom, an impropriety which long maintained its ground, and has not even yet finally expired. It probably aroſe from the name of Ruſſia having been imparted, with the epithets White, Red, &c. to diſtant provinces, one or two of which were ſubject to Poland; whence the vagueneſs of the appellation induced ſtrangers to indicate the kingdom by the metropolis, a practice not unuſual in the obſcurity of the middle ages.

Original Population. The grand population of the European part of the Ruſſian empire is well known to be Slavonic. The Slavons form an extenſive original race of mankind, radically diſtinct from the Goths on the one hand, who, as poſſeſſing the countries more to the weſt, muſt have preceded the Slavons in their paſſage from Aſia into Europe; and equally diſtinguiſhable, in language, perſon, and manners, from the Tatars and other nations on the eaſt. They are the Sarmatæ of the ancients; and were ever remarkable for perſonal elegance and ſtrength.

Progreſſive Geography. To enter much into the progreſſive geography of the Ruſſian empire, would be to write a hiſtory of its revolutions. Till the ſixteenth century, this empire continued almoſt unknown to the reſt of Europe, and its geography muſt be faintly traced in the Byzantine annals, particularly in the work of Conſtantine Porphyrogenitus on the adminiſtration of the Empire. Even at that period the Ruſſians held the ſpacious province around Moſcow; and though confined on the eaſt, extended their power to the Baltic, and the vicinity of Pruſſia. Towards the S. the river Boryſthenes conducted them to the Euxine ſea. The capitals were Novagorod and Kiow; the former afterwards famous for its alliance with the Hanſeatic league; the latter ſtill memorable for its catacombs. The city of Julin, at the mouth of the Oder, was alſo remarkable for its trade and opulence in the eleventh century, being the mart of commerce between the Slavonic nations and the weſtern regions of Europe;

[2] Gibbon, x. 219.

but

but that capital belonged to the weſtern Slavons and was diſtant from the frontiers of Ruſſia. The victories of the Tatars conſtrained the Ruſſian princes to abandon Kiow about the middle of the twelfth century, and that city having been ruined by the Tatars in the thirteenth, Moſcow became the ſeat of empire. The geography of Ruſſia, in the middle ages, becomes not a little embarraſſed from its repeated ſubdiviſion into ſmall monarchies, which remained in a ſtate of vaſſalage to the Tatars till the year 1462, when Ruſſia emerged from this eclipſe, and gradually acquired its preſent extent and power. Not to detail the ſucceſſive addition of province to province, and kingdom to kingdom, it muſt, however, be remembered that a great founder of the Ruſſian power was Ivan IV, who reigned from the year 1534 to 1584, and ſubdued the Tatar kingdom of Aſtracan, and ſome provinces on the N. W. His ſucceſſor Feodor I, turned his arms towards Siberia, a country which has been however moſt ſlowly inveſtigated, and indeed ſcarcely known till the year 1730. In modern times, Ruſſia has gradually extended her limits at the expence of the Turks; and the addition of an ample third of Poland, has afforded her a ſource ſtill more ſtable and fertile of men and power. Progreſsive Geography.

The following appear to be the chief hiſtorical epochs of this mighty empire. Hiſtorical Epochs.

I. The foundation of the kingdom by Ruric, a Scandinavian chief, A. D. 862. His deſcendants held the ſceptre above 700 years.

II. The naval expeditions of the Ruſſians againſt Conſtantinople, in the tenth century.

III. In the ſame century the baptiſm of Olga the queen, and the ſubſequent converſion of the Ruſſians to Chriſtianity.

IV. The invaſion of the Tatars under Batu Khan in 1236, and the ſubſequent vaſſalage of Ruſſia.

V. The abolition of the power of the Tatars by Ivan III, who died in 1505.

VI. The reign of Ivan IV, ſurnamed Baſilowitz, known to weſtern hiſtorians by the ſtyle of the tyrant John Baſilides.

VII. The death of the Czar Feodor in 1598, with whom expired the long progeny of Ruric. Several impoſtors afterwards appeared, under

Historical Epochs.

under the name of Demetrius, the murdered brother of this ſovereign.

VIII. The acceſſion of the dynaſty of Romanow 1613, in the perſon of Michael Feodorowitz, ſprung in the female line from Ivan IV. He was followed by his ſon Alexis, father of Peter the Great.

IX. The reign of Peter I has been juſtly conſidered as a moſt important epoch in Ruſſian hiſtory; but on reading the annals of the preceding reigns from that of Ivan IV, it will be perceived that a part of our admiration for Peter ariſes from our inattention to his predeceſſors; and that the light which he diffuſed was far from being ſo ſudden and grand as is commonly imagined.

X. The late reign of Catherine II deſerves to be commemorated among the moſt brilliant epochs in the Ruſſian annals; nor muſt her perſonal crimes exclude her from the liſt of great and able ſovereigns.

Antiquities.

Of ancient monuments Ruſſia cannot be ſuppoſed to afford great variety. Sometimes the tombs of their pagan anceſtors are diſcovered, containing weapons and ornaments. We learn from Herodotus that the Scythians regarded the tombs of their princes with ſingular veneration; and the Sarmatians or Slavons ſeem to have imbibed the ſame ideas. The catacombs at Kiow were perhaps formed in the Pagan period, though they be now replete with marks of Chriſtianity. They are labyrinths of conſiderable extent, dug as would appear, through a maſs of hardened clay, but they do not ſeem to contain the bodies of the monarchs [3].

The idols of Pagan Ruſſia are ſometimes found caſt in bronze; and Dr. Guthrie of Peterſburg has given an ingenious account of the Slavonic mythology [4]. The chief God, Peroun, was ſuppoſed the author of thunder; Voloſs reſembled Pan; Swetovid was the Sun or Apollo; Silnoy Bog, or the ſtrong god, was Hercules; Leda reſembles Mars, &c. Many divinities preſided over love, ſuch as Lada or Venus; Lelio or Cupid, and his brother Dido, who, like the Anteros of the Greeks, counteracted the power of Cupid. Radagaſt was the god who protected towns. The Ruſſians had alſo goddeſſes correſponding with Ceres, Diana, and Pomona; and their Rouſſalki were nymphs of the woods and waters.

[3] Herbin. Cryptæ Kijovienſes.

[4] Diſſertations ſur les antiquités de Ruſſie, 1795. 8vo.

The Pagan Ruſſians alſo worſhipped Znitch or Veſta, in the form of fire; and venerated waters, the Bog or Hypanis being as highly regarded as the Ganges among the Indians: the Don and the Danube were alſo holy ſtreams; and there was a ſacred lake, environed with a thick foreſt, in the iſle of Rugen, which was adored by the Slavonic tribes. ANTIQUITIES.

The converſion of the Ruſſians muſt of courſe have been followed by the erection of many churches; but as Byzantine or Italian architects were employed, thoſe edifices have but few peculiarities. Perhaps no country of conſiderable extent can afford fewer monuments of ancient art than Ruſſia.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.- Population.- Colonies.-- Army.—Navy.—Revenues.—Political Importance and Relations.

Religion. THE religion of Ruſſia is that of the Greek church, of which, ſince the fall of the Byzantine empire, this ſtate may be conſidered as the chief ſource and power. The creed and ceremonies of the Greek church vary conſiderably from the Roman, and often in ſuch minute circumſtances that a detail would become tedious: the Greeks believe in the proceſſion of the Holy Ghoſt from the Father alone, while the Roman orthodoxy includes the Son in the myſtery. In pomp the Grecian ceremonies do not yield to the Roman catholic; but while the Greeks admit pictures into their churches, they reject images with abhorrence.

Eccleſiaſtic Geography. The chief patriarch of the Ruſſian church had uſurped extraordinary powers, to the great injury of the imperial prerogative; but the ſpirit of Peter I broke theſe ignominious bonds, and the patriarchs have ſince become complaiſant inſtruments of the court. The clergy are very numerous, and have ſeveral privileges, particularly exemption from taxes. They have been computed at 67,000, ſecular and regular. The Greek religion permits the marriage of the ſecular clergy. The cathedrals and pariſh churches in the empire are computed at 18,350; the monaſteries at 480; nunneries 74: monks ſuppoſed to be 7300, nuns 3000. The monaſteries have not been ſuch favourite reſorts ſince Peter I and Catherine II opened the ſources of induſtry. The biſhoprics amount to about 30.

Government. The government of Ruſſia appears to have been always deſpotic, there being no legiſlative power diſtinct from that of the ſovereign. What is called the ſenate is only the ſupreme court of judicature. In

1606 the Czar Baſil pretended to a free election by the ſenate or people; but his coronation was produced by intrigues among the chiefs; and there appears no veſtige in Ruſſian hiſtory of any national council or parliament, or eſtates of the empire, far leſs of a free elective diet, like that of Poland, another Slavonic nation, which a falſe ſemblance of liberty led to deſtruction, while the ſlavery of Ruſſia produced gradual aggrandizement. Nothing indeed can be more oppoſite to any theories of government, influence of climate, national character, &c. than the contraſt between Ruſſia and Poland. In Ruſſia there is an uniformity of ſubjection, which at leaſt blends the nation in one united maſs, while in Poland the nobles alone were free, and the king and the people alike ſlaves; but the Poliſh nobles were ſtrangers to the grand maxim that the ſlavery or deſtruction of the nobility muſt ſoon follow that of the people. This vaſt empire is divided into about 40 governments, or vice-royalties, of which 34 may be aſſigned to the European part. The whole frame of the government may be pronounced to be military; and nobility itſelf is only virtually eſtimated by rank in the army. Government.

Immediately on the fall of the Roman Empire, we find the Gothic tribes ſedulouſly collecting and publiſhing their peculiar codes of laws; but it would be difficult to diſcover any Slavonic code till the ſixteenth century; when they emanated not from the national council, but from the arbitrary will of the monarch. Even in Poland, a country more early civilized than Ruſſia, the firſt appearance of laws is in a few edicts of Caſimir the Great in the fifteenth century; nor is there any ſemblance of a code more ancient than the middle of the ſixteenth. This ſingular defect may perhaps contribute to account for the fates of the Slavonic nations; and even the pretended Poliſh liberty of electing the monarch had not exiſted above three hundred years. The firſt Ruſſian code dates from the reign of Ivan IV; and the late Empreſs had the merit of drawing up a new code with her own hands. Laws.

The population of Ruſſia is ſo diffuſe, and ſpread over ſo wide an extent of territory, that very oppoſite opinions have been entertained concerning it. By moſt writers it was only eſtimated as equal to that of France, or about 25,000,000: and it was at the ſame time ſuppoſed that the recent acquiſitions in Poland might add 5,000,000 to the amount. Population.

POPULATION.

But in a late publication [5], Mr. William Tooke, who has long reſided in Ruſſia, and appears to be intimately acquainted with the original documents concerning that empire, has given new elucidations of this important ſubject, which conſiderably ſwell the ſum of the inhabitants. He obſerves that, in order to collect the capitation tax, enumerations of the people have been made at intervals of twenty years ſince 1723. On the firſt enumeration, the perſons ſubject to the tax were ſtated at 5,794,928: this number was always upon the increaſe; and in 1763 was ſuppoſed to yield data for the computation of 20,000,000, as the total population of the empire. But in 1783, more exact eſtimates were prepared; and in the 41 vice-royalties, then compoſing the empire, the ſtate of male inhabitants * was as follows:

Merchants - - -	107,408
Burghers - - - - -	293,793
Odnodvortzi, and free countrymen - -	773,656
Exempt from taxes - - - -	310,830
Crown boors - - - -	4,674,603
Private boors - - - -	6,678,239
	12,838,529

The number of females being ſuppoſed to equal that of the males, a population would ariſe of 25,677,000. The moſt important acceſſion to the Ruſſian population ariſes from the partitions of Poland, which with ſmall acquiſitions from the Porte have been thus ſtated [6]:

At the firſt partition of Poland in 1773 -	1,226,966
From the Porte in the years 1774 and 1783 -	171,610
From the Porte in the year 1791 - -	42,708
At the ſecond partition of Poland 1793 -	3,745,663
By the ſubjection of Courland - -	387,922
At the third partition of Poland 1795 -	1,407,402
	6,982,271

[5] View of the Ruſſ. Emp. ii. 124.

* Even male babes are included in the capitation tax, under the denomination of their parents.

[6] Tooke i. 327.

Mr.

Mr. Tooke afterwards proceeds to give the following account, drawn up as he aſſures us, with the greateſt nicety of examination, and preſenting the whole population of the empire in 1799: POPULATION.

" By the reviſion of 1783 there were in the ſaid 41 governments, computing the female ſex as equal to the male, of regiſtered perſons - - - - - -	25,677,000
The amount of the Kozaks of the Don and the Euxine, according to the moſt authentic private accounts at leaſt - - - - - - - - - -	220,000
For the unnumbered tribes and claſſes, at the time of the fourth reviſion, we cannot without the higheſt improbability allow leſs than - - - - - - -	1,500,000
Conſequently the Ruſſian empire in the year 1783, might have inhabitants amounting altogether to - -	27,397,000
According to the reſults deduced from experiments and obſervations on the fruitfulneſs and mortality in Ruſſia, this maſs muſt of itſelf have increaſed annually more than half a million. If, in order to keep as far as poſſible from all exaggeration, we deduct the half of this ſurplus of births, to allow for the diminution it may have ſuffered by an extraordinary mortality, as by war; there remains by every year an increaſe of 25,000 new citizens, which, excluſively of all aſcending proportion, in 12 years makes a ſum total of - - - - - - - -	3,000,000
The new acquiſitions ſince the year 1783, or the preſent nine vice-royalties of Taurida, Minſk, Bratzlau, Volneſenſk, Podolia, Volhynia, Courland, Vilna, and Slonim, contain according to a legitimated ſtatement already mentioned - - - - - - -	5,755,000
Conſequently we may admit, by the moſt moderate eſtimate, the population of the Ruſſian empire at preſent to be - - - - - - - - -	36,152,000
Or in a round ſum thirty-ſix millions of perſons."	

Population. Of this population Mr. Tooke aſſigns only about three millions and a half to Siberia, or Aſiatic Ruſſia, which contains the five governments of Perm, Ufa, Kolhyvan, Tobolſk, and Irkutſk; but Perm is itſelf ſituated on the European ſide of the Uralian mountains, ſo that we might perhaps allow even 33,000,000 for the population of European Ruſſia.

Colonies. Ruſſia being a ſtate new in maritime affairs, cannot boaſt of any colonies, nor can this name be applied to a ſmall eſtabliſhment or two in the eaſtern parts of Siberia.

Army. But on the Ruſſian armies a great part of the fate of Europe and Aſia muſt depend, and the ſubject of courſe deſerves particular attention. Mr. Tooke eſtimates the whole amount of the Ruſſian troops at 600,000; of which 500,000 may be eſteemed effective. But it is ſuppoſed that not leſs than 150,000 are neceſſary in the garriſons, ſcattered over this vaſt and heterogeneous empire, ſo that if Ruſſia ſent forth her whole military force, it would hardly exceed 350,000, of which about 30,000 might be Cozaks. The Ruſſian troops are remarkable for a kind of ſteady fanaticiſm, which renders their retreat almoſt impoſſible; but they are more accuſtomed to open and direct combat, than to the grand manœuvres of war. In weight and conſiſtence they ſomewhat reſemble the Spartan phalanx, which was forced to yield to the ſuperior agility and rapidity of the Roman legion.

Navy. The Ruſſian navy conſiſts of ſeveral detached fleets, employed in the remote ſeas on which the Empire borders at different extremities. The chief fleet is of courſe that of the Baltic, which conſiſts of about thirty-ſix ſhips of the line. That in the Euxine, or Black ſea, at the harbours of Sevaſtopol, and Kherſon, was computed at 12 ſhips of the line, but not of a high rate, as the Euxine affords no great depth of water; but there are many frigates, gallies, chebecks, and gun-boats. The fleet of gallies in the Baltic, in 1789, was eſtimated at 110. The Ruſſians are rather averſe to a ſea-faring life; and there is ſcarcely any proſpect of this Empire ever becoming a great maritime power.

Revenues. The revenues of Ruſſia are ſuppoſed to amount to about 50,000,000 of rubles; which, valuing the ruble at four ſhillings, will be equal to 10,000,000l. ſterling. The national debt is ſuppoſed to amount to little or nothing.

With

With all theſe advantages it is no wonder that the political importance, and relations of Ruſſia are ſo preponderant in Europe, and Aſia. In Europe her recent acquiſitions have contributed to render her more and more formidable. It is fortunate that the powerful dominions, of Pruſſia, and Auſtria, are interpoſed between Ruſſia and the German Empire, elſe the liberties of Europe would be endangered, and perhaps totally cruſhed, by a new flood of barbarians iſſuing from the ſame ſources with thoſe which formerly deluged the civilized world. If the Ruſſian empire be not divided, there is room to predict that another Macedon will ſubdue another Greece. Poland has been devoured; Denmark and Sweden may be conſidered as ſubject-allies; and if the whole force of Ruſſia were bent againſt either Auſtria or Pruſſia, it is hardly to be conceived that the ſhock could be withſtood. It would certainly be for the intereſt of Europe that the Ruſſian force ſhould be diverted towards Aſia, that by extending her dominions in that quarter her ſtrength may be ſtill more diſperſed, when probably a diviſion of the Empire would commence, to the laſting advantage of the other continental powers. As the Greek religion prevails among the Chriſtians of Greece, and Aſia, Ruſſia would in them find more faithful ſubjects, than among the catholics and proteſtants of Europe.

POLITICAL IMPORTANCE, &c.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.—Language.—Literature.—Education.—Univerſities.—Cities and Towns.—Edifices.—Roads.—Inland Navigation.—Manufactures and Commerce.

Manners and Cuſtoms.

As the Ruſſian empire comprizes ſo many diſtinct races of men, the manners of courſe muſt be very various. But in the European diviſion, to which this brief account is reſtricted, the grand diſtinctions are, a few Laplanders on the eaſt of the mountains of Olonetz, which divide Ruſſia from Sweden; the Fins of the White ſea, and the Baltic; the grand Slavonic maſs in the centre, including the Cozaks of the South who are alſo Slavons; and a few Tatars in Taurida, a beautiful region, which forms the ſouth-eaſt extremity of Europe. The Laplanders are well known to be a diminutive race, who would be amiable from the paſtoral ſimplicity of their manners, were not their perſons ugly, and disfigured with phyſical impurity. The Fins are alſo rather ſhort in ſtature, with flat faces, deep cheeks, dark grey eyes, a thin beard, tawney hair, and a ſallow complexion; but the ſouthern Fins, though they retain the national features, are of ſuperior appearance. There is a ſmall diſtrict in the northern extremity of Scandinavia, idly called Finmark; but the chief region of the Fins is around the gulph of Finland, and thence on the ſouth of the White ſea, where was in ancient times the celebrated region of Permia, by the Scandinavian writers called Biarmia, which ſome ſuppoſe extended from the White ſea to the mountains of Ural. Permia is mentioned in the account drawn up by Ohter for the uſe of Alfred the Great: and a fabulous detail is given of its wealth, particularly the rich temple of Yummala, the chief god of the Fins, decorated with a profuſion of gold, and

jewels. Mr. Tooke[1] assures us that the ruins of ancient towns remain to evidence the civilization and prosperity of this people; and he supposes that the Permians traded with Persia, and India, by the Caspian sea, the rivers Volga and Kama, and that the mart was Tscherdyn, an old commercial town on the river Kolva. The repeated incursions of the Scandinavian pirates drove the Fins further to the south; and modern Perm is about 700 miles from the sea. The Fins used to excell in fishing and the chace; but they are now much blended with the Slavons, and have generally adopted their manners and customs.

MANNERS AND CUSTOMS.

The manners of the Slavonic Russians, who constitute the chief mass and soul of this empire, have been well described by Dr. Guthrie, and Mr. Tooke. They are generally middle-sized and vigorous: the tallness, and grace of the Polish Slavons seem to arise from superior climate, and soil. The general physiognomy consists of a small mouth, thin lips, white teeth, small eyes, a low forehead, the nose commonly small, and turned upwards, beard very bushy, hair generally reddish.[2] The expression of the countenance is gravity, with good nature, or sagacity; the gait and gestures lively and impassioned. The women destroy their naturally fine complexion with paint, and their personal charms expire at an early age. The Russian is extremely patient of hunger and thirst; and his cure for all diseases is the warm bath, or rather vapour bath, in which the heat is above 32° of Reaumur, which contributes greatly to health, and is supposed to be the only cause why that shocking disease, the Plica Polonica, has never appeared in Russia. Dr. Guthrie has shewn that the Russians retain many manners and customs derived from their Pagan ancestors, and has given some curious specimens of their songs and music, which seem to be very pleasing. He has also compared their dances with those of the Greeks; and finds in one of them a considerable resemblance of the wanton Ionic, while another resembles the Pyrrhic. He observes that the country girls dress in the *saraphan*, resembling the ancient *stola*, and bind up their hair with the *lenta*, a ribbon like the ancient *vitta*. They tinge their cheeks with the juice of the *echium Italicum*. When a marriage is proposed, the lover, accompanied by a friend, goes to the house of the

[1] Tooke, i. 528. [2] Tooke, ii. 253.

bride,

Manners and Customs.

bride, and ſays to her mother, "ſhew us your merchandize; we have got money;" an expreſſion which is thought to refer to the ancient cuſtom of buying a wife. The other ceremonies are equally curious, but cannot be detailed in this abſtract. The Ruſſians ſhew great attention to their nurſes, and are ſo hoſpitable that they offer to every ſtranger the *Khleb da ſol*, or bread and ſalt, the ſymbol of food, lodging, and protection. At a repaſt, ſome ſalt fiſh, or ham, and a glaſs of brandy, are preſented in the firſt place; and after dinner cakes made with honey are uſually ſerved; the common drink is kvaſs, an acid, thin, malt liquor: the houſes are ornamented with ſtoves, and, among the rich, by flues conducted into every room, which is at the ſame time guarded with double windows. Fires are alſo employed with profuſion to obviate the ſeverity of winter in the northern provinces; but at Peterſburg the air is ſo pure that there is no occaſion to paint the iron chains in the ſtreets, as they are not attacked by ruſt. In ſeveral inſtances the Ruſſians form a curious junction of European, and Aſiatic manners; many of their ceremonies partake of Aſiatic ſplendour: the great are fond of dwarfs; and ſome opulent ladies maintain female tellers of tales, whoſe occupation is to lull their miſtreſſes aſleep, by ſtories reſembling thoſe of the Arabian nights.

Language.

The Ruſſian language is extremely difficult to pronounce, and not leſs difficult to acquire, as it abounds with extraordinary ſounds, and anomalies of every kind. The characters amount to no leſs than thirty-ſix; and the common ſounds are ſometimes expreſſed in the Greek character, ſometimes in characters quite unlike thoſe of any other language. The tones peculiar to the Ruſſian are often expreſſed by letters, which wear a very ill choſen ſemblance to the Greek or Roman. In ſome reſpects the ſounds ſeem to approach the Perſian and Arabic; a circumſtance which can hardly ariſe from the Mahometan domination of the Tatars, as after Neſtor, who wrote his annals about the year 1000, there is a ſucceſſion of Ruſſian authors. Among other ſingularities there is one letter to expreſs the *ſch*, and another the *ſſch*, the latter a ſound hardly pronounceable by any human mouth.

Literature.

The Ruſſian literature ſucceeded, as uſual, the converſion of the Empire to Chriſtianity. As there is no inducement for ſtrangers to

learn the language, for the purpoſe of peruſing works of genius, it is unneceſſary to enlarge upon it in a work of this general nature. The elder authors are either writers of annals, or compilers of martyrologies, and lives of ſaints. Neſtor, the earlieſt hiſtorian, alſo ſet an example of the latter kind. In recent times the beſt authors reſident in Ruſſia, ſuch as Pallas, and many others, have had recourſe to the German language: and little can be expected from the native literature, till the language ſhall have been reduced to the more preciſe alphabet, and poliſhed form of other European dialects. LITERATURE.

Education is little known or diffuſed in Ruſſia, though the court have inſtituted academies for the inſtruction of officers and artiſts. The univerſity of Peterſburg, founded by the late Empreſs Catharine II, is a noble inſtance of munificence, and it is hoped will eſcape the fate of the colleges, founded at Moſcow by Peter the Great, which do not ſeem to have met with the deſerved ſucceſs. Education. Univerſities.

In conſidering the chief cities and towns of Ruſſia, Moſcow the ancient capital attracts the firſt attention. This city dates from the year 1300, and is of very conſiderable extent, and population, though injured by a peſtilence in 1771. Prior to this mortality the houſes in Moſcow were computed at 12,538, and the population at not leſs than 200,000.* Moſcow is built in the Aſiatic manner, in which cities cover a vaſt ſpace of ground. Peterſburg, the imperial reſidence, is ſaid to contain 170,000 inhabitants; and is the well-known, but ſurpriſing erection of the laſt century. This city has been ſo repeatedly deſcribed that the theme is trivial. Suffice it to obſerve that it ſtands in a marſhy ſituation on the river Neva, the houſes being chiefly of wood, though there be ſome of brick ornamented with white ſtucco. The ſtone buildings are few; and Peterſburg is more diſtinguiſhed by its fame, than by its appearance or opulence. The nobleſt public works are the quays, built of perpetual granite, while we employ periſhable freeſtone. Cities and Towns. Moſcow. Peterſburg.

Aſtracan is ſuppoſed to ſtand next to Peterſburg in population. This city, near the mouth of the vaſt river Volga, was the capital of the Aſtracan.

* Coxe, Tr. in Poland, i. 351. 8vo. eſtimates, from good evidence, the population at 250,000.

Cities and Towns.

Tatar kingdom of Capſhak; but the churches are chiefly of brick, and the houſes of wood. The population is computed at 70,000. Cronſtadt in the government of Peterſburg, and Kollonna in that of Moſcow, are ſuppoſed each to contain about 60,000 inhabitants. Cherſon in the government of Ecatharinſlav, and Caffa in Taurida, are ſaid each to contain 20,000; while 30,000 are aſcribed to Tula, and 27,000 to Riga, a city of conſiderable trade and conſequence. In general the Ruſſian towns are built of wood, and preſent few remarkable edifices. A cathedral or two, and the royal palaces and fortreſſes, may deſerve a deſcription, better adapted to a book of travels, than to a work of this nature.

Edifices.

Inland Navigation.

The inland navigations of Ruſſia deſerve more attention. Among other laudable improvements, Peter the Great formed the deſign of eſtabliſhing an intercourſe by water between Peterſburg and Perſia, by the Caſpian ſea, the Volga, the Meſta, and the lake of Novgorod, &c. but this ſcheme failed by the ignorance of the engineers, and the emperor afterwards employed Captain Perry, who rather taught the proper manner than completed any great work. During the long reign of the late empreſs many canals were accompliſhed, or at leaſt received ſuch improvements that the chief honour muſt be aſcribed to her adminiſtration.

Viſhnei Voloſhok.

The celebrated canal of Viſhnei Voloſhok was in ſome ſhape completed by Peter, ſo as to form a communication between Aſtracan and Peterſburg, the courſe being chiefly afforded by rivers, and it was only neceſſary to unite the Twertza running towards the Caſpian, with the Shlina, which communicates with the Baltic. The navigation is performed according to the ſeaſon of the year, from a fortnight to a month; and it is ſuppoſed that near 4000 veſſels paſs annually.[1]

Ladoga.

The canal of Ladoga, ſo called, not becauſe it enters that lake, but as winding along its margin, extends from the river Volkof to the Neva, a ſpace of 67½ miles, and communicates with the former canal. By theſe two important canals conſtant intercourſe is maintained between the northern and ſouthern extremities of the empire. Another canal leads from Moſcow to the river Don, forming a communication with

[1] Phillips, 20, 29.

the

the Euxine; and the canal of Cronſtadt forms a fourth. Peter the Great alſo deſigned to have united the Don with the Volga, and thus have opened an intercourſe between the Caſpian, and Euxine ſeas and the Baltic: and the whole empire abounds ſo much with rivers that many advantageous canals remain to be opened. Some progreſs was made in a canal from the river Volkof towards the White ſea, which would conſiderably improve the commerce of Archangel. INLAND NAVIGATION.

By theſe means the inland trade of Ruſſia has attained conſiderable proſperity; and the value of her exports and imports have been long upon the increaſe. Several manufactures are conducted with conſiderable ſpirit.[2] That of iſinglaſs, which is a preparation of the ſounds, or air bladder of the ſturgeon, flouriſhes on the Volga, the chief ſeat alſo of that of kaviar, conſiſting of the ſalted roes of large fiſh. The manufactories of oil and ſoap are alſo conſiderable; and Peterſburg exports great quantities of candles, beſides tallow, which abounds in an empire ſo well repleniſhed with paſturage: nor muſt the breweries and diſtilleries be forgotten. Saltpetre is an imperial traffic, and ſome ſugar is refined at Peterſburg. There are ſeveral manufactures of paper, and of tobacco, which grows abundantly in the ſouthern provinces. Linen is manufactured in abundance, the beſt comes from the government of Archangel. Cotton is little wrought, but the ſilk manufactories are numerous: coarſe cloths, carpets, and hats are alſo made in Ruſſia, and leather has long been a ſtaple commodity. The mode of making Ruſſian leather is deſcribed with great minuteneſs by Mr. Tooke.[3] Shagreen is made of choſen portions of the hides of the horſe and aſs, impreſſed with the hard ſeeds of certain plants, which are trodden in to mark the leather. Ruſſia produces vaſt quantities of wax, which is however generally exported unbleached; nor are there wanting fabrics of earthen ware and porcelain. Iron founderies abound; and in the northern government of Olonetz is a grand foundery of cannon. Manufactures and Commerce.

The commerce of Ruſſia was known in the middle ages, by the connection between the Hanſe towns, in the north of Germany, and Novgorod, eſtabliſhed about 1276. So wide is now this empire that

[2] Tooke, iii. 463, &c.

[3] Vol. iii. p. 513, &c.

Manufactures, &c.

it maintains a commerce of the moſt remote deſcriptions, on the Baltic, and the White ſea, the Euxine and the Caſpian, with Perſia, and with China. The Engliſh having, ſo to ſpeak, diſcovered Ruſſia in the ſixteenth century, the Czar Ivan Baſilowitz, delighted with this new intercourſe, cauſed a harbour to be conſtructed on the White ſea, where the Engliſh arrived, which was called the harbour of the Archangel Michael, and afterwards, for brevity, Archangel. This commerce continued till Peterſburg was founded: yet Archangel ſtill affords a moderate trade, and exports pot aſhes, kaviar, tallow, wax, hides, hemp, &c. with corn, linſeed, coarſe linens, and other articles. The commerce of Peterſburg is much of the ſame deſcription: that of Riga is very conſiderable, and to other articles are added maſts from the Dnieper. Riga was the capital of Livonia, a province which formerly occaſioned many diſputes between Ruſſia, Sweden, and Poland; but in 1710 was finally ſubdued by Peter the Great. In general the exports of Ruſſia, by the Baltic, exceed the imports by one third part. The imports of Peterſburg in 1797 were computed at about 20,000,000 of rubles, or about 4,000,000l. ſterling. Ruſſia is ſuppoſed to export grain annually to the value of 170,000l. and hemp, and flax, raw, and manufactured, to the amount of a million and a half ſterling.

The commerce of the Euxine, or Black ſea, is of inferior moment, chief exports, furs, ſalt beef, butter, cordage, ſail cloth, kaviar, corn; with iron, linen, and ſome cotton ſtuffs. Imports, wine, fruit, coffee, ſilks, rice, and ſeveral Turkiſh commodities.[4] The commerce of the Caſpian was known to the Genoeſe, who, by permiſſion of the Byzantine emperors, had formed a ſettlement in Crim. The chief Ruſſian harbours are Aſtracan, the chief ſeat of the Caſpian commerce, Gurief, and Kiſliar. Perſian havens are Derbent, Niſabad, and Baku; with Medſhetizar, and Farabat on the ſouthern ſhore of the Caſpian. Aſtrabat opens the trade with Kandahar. From Aſtracan are exported many European manufactures; and the chief imports are raw ſilk, rice, dried fruits, ſpices, ſaffron, ſulphur, and naphtha. The Hindoo merchants occaſionally bring gold, and precious ſtones. The annual trade is computed at 1,000,000 of rubles, or 200,000l. That of the Euxine is not above one third of this value.

[4] Tooke, iii. 572.

Ruſſia

Manufactures, &c.

Ruſſia likewiſe maintains ſome commerce by land with Pruſſia. That with Perſia is of little moment; chief imports ſilk. There is a conſiderable trade by land with the Kirguſes, who ſend horſes, cattle, and ſheep, in return for woollen cloths, iron, and European articles. That with China is nearly on a par; each country tranſmitting to the amount of about 2,000,000 of rubles (400,000l.). Ruſſia exchanges her precious Siberian furs for tea, ſilk, and nankeen.

The internal commerce of Ruſſia is very conſiderable; and Siberia is ſaid to afford in gold, ſilver, copper, iron, ſalt, gems, &c. to the amount of 12,000,000 of rubles (2,400,000l.), that between the ſouthern and northern provinces is alſo of great extent and value. The coin current in the empire is ſuppoſed to amount to about 30,000,000l. ſterling, the paper money to about 20,000,000l. The Siberian gold, and ſilver ſupply an important addition to the national currency.

CHAPTER IV.

Natural Geography.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

Climate and Seaſons.

THE climate of Ruſſia in Europe, as may be expected in ſuch a diverſity of latitudes, preſents almoſt every variety from that of Lapland, to that of Italy: for the newly acquired province of Taurida may be compared with Italy in climate and ſoil. But winter maintains the chief ſway at Peterſburg, the capital, and the Neva is annually frozen from November to March, or April. Euler has even obſerved that at Peterſburg only two months in the year may be expected to be free from ſnow: and the climate around the frozen ocean, and the laſt European iſle upon the N. E. that of Novaya Zemlia, or the New Land, is of noted ſeverity, the northern ſide being encompaſſed with mountains of ice, and the ſun not viſible from the middle of October, till February; while it never ſets during June and July. Taurida preſents, on the contrary, all the luxuriance of the ſouthern year, while the middle regions are bleſt with the mild ſeaſons of Germany and England.

Face of the Country.

In ſo wide an empire the face of the country muſt alſo be extremely various; but the chief feature of European Ruſſia conſiſts in plains of a prodigious extent, rivalling in that reſpect the vaſt deſarts of Aſia and Africa. In the ſouth are ſome extenſive *Steppes*, or dry and elevated plains, ſuch as that above the ſea of Azof, in length about 400 Engliſh miles. The numerous and majeſtic rivers alſo conſtitute a diſtinguiſhing feature of this empire.

Soil and Agriculture.

The ſoil is of courſe alſo extremely diverſe, from the chilling marſhes which border the White and Frozen ſeas, to the rich and fertile plains

Soil and Agriculture.

on the Volga. The moſt fertile is that between the Don and the Volga, from Voronetz to Simbirſk, conſiſting of a black mould, ſtrongly impregnated with ſaltpetre; that is a ſoil formed from ſucceſſive layers of vegetable remains.[1] The great extent of arable land might be much encreaſed if induſtry were more diffuſed. In Livonia, and Eſthonia the medial returns of harveſt are eight or ten fold; and the latter is generally the produce of the rich plains near the Don, where the fields are never manured, but on the contrary are apt to ſwell the corn into too much luxuriance. Paſturage is ſo abundant that the meadows are little regarded, and the artificial production of graſſes is ſcarcely known. Some of the meadows are watered, and produce large crops of hay, the dry paſtures (ſometimes opened for grain) yield a ſhort, but nutritious produce; in a few of the ſteppes the graſs will attain the height of a man, and is ſeldom mown. In the ſylvan age the annual burning of this graſs, as practiſed by ſavages, may have produced the rich black mould ſo abundant in ſome large regions of the empire.

Agriculture is hardly known in the northern parts of the governments of Olonetz, and Archangel; but in the central parts of the empire has been purſued from time immemorial. The Ruſſian plough is light and ſimple, and ſcarcely pierces the ground to the depth of two inches; but in the ſouthern provinces a heavier kind is uſed, reſembling the German. In what is called the ſummer field the corn is ſown and reaped in the ſame year; while in the winter field the corn is ſown in autumn, and the produce reaped in the enſuing ſummer. The former yields what is called ſummer wheat, and rye, barley, millet, buck-wheat, flax, hemp, peaſe, &c. the latter only wheat, or rye: and the winter field is commonly left fallow till the following ſpring. In general agriculture is treated with great negligence, yet the harveſts are abundant: even in the neighbourhood of Peterſburg there are large marſhes which might be eaſily drained, and converted into fertile land. In the north rye is moſt generally cultivated; but in the middle and the ſouthern regions wheat: in the government of Ekatarinoſlaf the Arnautan wheat is beautiful, the flour yellowiſh, the return commonly

[1] Tooke, i. 67.

fifteen

Soil and Agriculture.

fifteen fold; nor is Turkiſh wheat, or maize unknown in Taurida. Barley is a general produce, and is converted into meal, as well as oats, of which a kind of porridge is compoſed. Millet is alſo widely diffuſed; but ſpelt, or bigg, little cultivated. Rice ſucceeds well in the vicinity of Kiſlear. Potatoes are unaccountably neglected, except in the north. This invaluable root bears the cold of Archangel, and yields from thirty to fifty fold. Hemp and flax form great objects of agriculture. Madder, woad, and ſaffron grow wild in the ſouth. The hop is alſo cultivated, and is found wild near the Uralian chain, and in Taurida. Tobacco has been produced ſince the year 1763, chiefly from Turkiſh and Perſian ſeed. The olive has been tried in vain at Aſtracan; but proſpers in the ſouthern mountains of Taurida along the Euxine. In the gardens are cultivated cabbages, of which a great number is conſumed in the form of ſour-kraut, and other plants common in Europe. The government of Moſcow produces abundance of excellent aſparagus; and ſugar-melons abound near the Don, and the Volga. Large orchards are ſeen in the middle and ſouthern parts of Ruſſia, yet quantities of fruit are imported. While apples, and pears are found as far north as the 49°, plumbs and cherries extend to the 55°. What is called the Kireſſkoi apple often weighs four pounds, is of an agreeable flavour, and will keep a long time. A tranſparent ſort from China is alſo cultivated, called the Nalivui, melting and full of juice.[2] The culture of the vine has been attempted in the ſouth, and will certainly, with proper management, ſucceed in Taurida. Bees are not known in Siberia, but form an object of attention in the Uralian foreſts, where the proprietors carve their hives to a conſiderable height in large trees, and they are ſecured from the bears by ingenious contrivances deſcribed by Mr. Tooke. Mulberry trees and ſilk are not unknown in the ſouth of European Ruſſia.

Rivers. Volga.

In enumerating the chief rivers of European Ruſſia the firſt attention is due to the majeſtic Volga, which forms, through a long ſpace, the boundary between Aſia and Europe, belonging properly to the latter

[2] Tooke, iii 340.

continent,

continent, in which it ariſes, and from which it derives its ſupplies, till at Tzaritzin, about 250 miles from its mouth, it turn S. E. into Aſia. This ſovereign of European rivers derives its ſources from ſeveral lakes in the mountains of Valday, and government of Twer, between Peterſburg and Moſcow; and bends its chief courſe to the S. E. till, near its junction with the Kama, an important river fed by many ſtreams from the Uralian chain, it turn towards the S. W. till it arrive at Tzaritzin. Its comparative courſe may be computed at about 1700 miles. This noble river, having no cataracts, and few ſhoals, is navigable even to Twer: but it is ſaid that the ſtream has become more ſhallow even ſince the commencement of laſt century. The tributary rivers of the Volga are chiefly from the eaſt, the Kama, which rivals the Volga at their junction, riſing in the government of Viatka, and running N. W., afterwards due E., and then S. On the weſt the chief ſtream which runs into the Volga is the Oka, which riſes in the government of Orel. Rivers.

Next to the Volga, on the weſt, is the Don, or Tanais, which riſes from a lake in the government of Tulan, and falls into the ſea of Azof, after a courſe of about 800 miles. Don.

The Neiper, or ancient Boryſthenes, riſes in the government of Smolenſk, about 150 miles to the ſouth of the ſource of the Volga, and about 100 to the S. E. of that of the Duna, or Duina, which flows into the Baltic, by Riga; and after a courſe of about 1000 miles, through rich and fertile provinces, falls into the Euxine. The Bog, or Hypanis, a far inferior ſtream, falls into the Liman, or eſtuary of the Neiper. Neiper.

The Nieſter, or ancient Tyras, now forms the boundary between European Turkey and Ruſſia, deriving its ſource from the north ſide of the Carpathian mountains, and falling into the Euxine at Akerman, after a courſe of about 600 miles. Nieſter.

Several important rivers direct their courſe towards the Arctic ocean, ſuch as the Cara, which though not a conſiderable river is yet remarkable, as forming the boundary between Aſia and Europe, for the ſpace of about 140 miles, the Uralian chain terminating ſo far from the ſea of Cara-ſkoi, or Karſkoi.

Rivers. Petſhora. The river Petſhora riſes in the Ural mountains, and joins the Frozen ocean, after a courſe of about 450 miles.

Next, on the weſt, is the Mezen, which falls into the White ſea after a courſe of about 350 miles.

Dwina. The Dwina falls into the gulph of Archangel, after a conſiderable courſe of about 500 miles. The Onega cloſes the liſt of the chief rivers that flow into the Arctic ocean; for thoſe of Olonetz, and of Ruſſian Lapland, are of little conſequence.

The Svir joins the lake of Onega with that of Ladoga, which by Neva. the Neva, a more important ſtream, falls into the gulph of Finland. This river, pervading the city of Peterſburg, is about forty miles in length, but of conſiderable breadth and depth, and ſubject to violent floods, which have been recently guarded againſt by deepening the bed, and by erecting ſtrong quays of granite.

The Narva alſo runs a ſhort courſe from the Tchudſkoi, or Peypus lake, into the Finniſh gulph. The Pernof riſes ſome miles to the weſt of the Peypus lake, and falls into the gulph of Riga.

Duna. But the moſt conſiderable ſtream in this quarter is the Duna, whoſe ſource has been already mentioned. It has ſome conſiderable and dangerous falls; and ſometimes greatly injures the city of Riga, at the Nimen. breaking up of the ice. Its courſe is about 500 miles. The Nimen now forms a part of the boundary between Ruſſia and Pruſſia, and is joined by a canal to the river Pripaz, which falls into the Neiper; but the cataracts in the latter river, about 250 miles above its eſtuary, greatly impede the intercourſe that might thus be eſtabliſhed with the Euxine.

Lakes. The chief lakes of European Ruſſia are ſituated in the N. W. diviſion of the empire. There is a conſiderable lake in Ruſſian Lapland, that of Imandra; to the ſouth of which the government of Olonetz preſents Onega. many extenſive pieces of water, particularly the large lake of Onega, which is about 150 miles in length, by a medial breadth of about 30. The iſlands and ſhores of the Onega are chiefly calcareous, and contain ſome valuable marbles. To the weſt is the Ladoga, about 130 miles in length, by 70 in breadth, being one of the largeſt lakes in Europe. As it has many ſhoals, and is liable to ſudden and violent tempeſts,

Peter

Peter the Great opened a canal along its ſhore, from the Volkof to the Neva. The fiſhery of this lake ſeems of little conſequence; but the northern ſhores produce the beautiful Finniſh marble, which is much uſed at Peterſburg. Lakes.

On the S. W. we find the lake of Peypus, about 60 miles in length by 30 in breadth: the northern part of this lake is ſtyled that of Tſhud, the ſouth that of Pſcove. From the Peypus iſſues the river Narova, or Narva, and there is an iſland, with three villages, called Bolka. Fiſh abound, particularly a kind which reſembles the herring; barbel, pike, perch, carp, and others. To the eaſt is the lake Ilmen, on which ſtands the ancient city of Novogorod. The Bielo, or White lake, is ſo called from its bottom of white clay. The lake of Coubenſkoi, and a few others to the N. E. are of inferior note. Peypus.

But the lakes that give riſe to the famous Volga muſt not be omitted. The chief of theſe is the lake Seliger, in the government of Twer, which, though narrow, extends about 30 miles in length; and a ſmaller lake, not far to the weſt, emits another ſource of that auguſt river.

It has already been mentioned that European Ruſſia is rather a plain country, though ſome parts of it be greatly elevated, ſuch as that which ſends forth the three rivers of Duna, Volga, and Nieper. This region, which is paſſed in travelling from Peterſburg to Moſcow, is by ſome called the mountains of Valday, from the town and lake of Valday, ſituated on the ridge; but by the natives it is ſtyled *Vhiſokaya Ploſtchade*, or elevated ground; and no mountains are here delineated in the common maps. In this quarter the ground is ſtrewn with maſſes of granite, but the hills are chiefly marl, ſand, and clay; and what are called the mountains of Valday ſeem to be a high table land, ſurmounted with large ſand hills, and interſperſed with maſſes of red and grey granite, with hornblende, ſhorl, and ſteatites: near Valday is the higheſt part of the ridge, which ſeems to be in a N. E., and S. W. direction. The hills, lakes, and groves are beautiful; and there is an iſland with a noble monaſtery. To the ſouth of Valday the maſſes of granite become ſmaller, and more rare; and calcareous petrifactions appear, which are followed by the clay near Moſcow. Some ſuppoſe Mountains. Valday.

Mountains. the uplands of Valday to be an extenſion of the mountains of Olonetz, paſſing between the lakes Onega and Ladoga, and afterwards between thoſe of Ilmen and Seliger; where is the chief ridge, and which ſeems to preſent the ruins of what was once a granitic chain. Mr. Tooke[3] computes the higheſt point of the Valday at only 200 fathoms above the level of Peterſburg, about 1200 feet above the ſea: the height is inconſiderable, and gives a ſtriking impreſſion of the gentle and plain level, through which ſuch extenſive rivers muſt purſue their courſe. The woods on the Valday are chiefly pine, fir, birch, linden, aſpen, and alder: ſoil in the vales fertile, moſtly clay and marl.

From the Valday towards the S. ſcarce a mountain occurs; but after paſſing the ſteppe of the Nieper, an arid plain with ſalt lakes, which indicate the extent of the Euxine at remote periods, we arrive at the

Taurida. mountains of Taurida, which are rather romantic than of remarkable height, being calcareous and alluvial. To the S. of this chain, along the ſhores of the Euxine, are the beautiful vales, ſo well deſcribed by Pallas, productive of the laurel, the olive, the fig, and the pomegranate, while the Arbutus adorns the ſteepeſt cliffs with its red bark, and foliage of perpetual green. The caper and the vine alſo abound in this natural orchard: and the flocks of ſheep and goats feeding on the hills, or bounding from the rocks, unite with the ſimple and good humoured manners of the Tatar inhabitants, to render the ſcene truly paſtoral.

But the moſt important chains of mountains in European Ruſſia re-

Olonetz. main to be deſcribed, thoſe of Olonetz in the furtheſt N., and thoſe of Ural which ſeparate Europe from Aſia. The chain of Olonetz runs in a direction almoſt due N., for the ſpace of 15° or about 900 G. miles. The moſt arctic part is ſaid to conſiſt chiefly of granite, gneiſs, petroſilex, and ſchiſtoſe limeſtone; and is not of great height, but retains perpetual ſnow from the altitude of the climate. More to the S., branches ſtretch on the E. towards the gulph of Kandalak; the granite is intermixed with large ſheets of talc, and patches of trap are found, particularly near the gold mines of Voytz, on the weſtern ſide of the river Vyg. Various other ores occur in this region, and veins of cop-

[3] Vol. i, 130.

per

per pyrites appear in the trap. Towards the lakes of Onega and Ladoga, the calcareous rather preponderates, as already mentioned. Mountains.

In the centre, between the mountains of Olonetz and thoſe of Ural, there ſeems to be a conſiderable chain extending from the E. of Mezen to the Canin Nos, a bold promontory which ruſhes into the frozen ocean; but this chain appears to have eſcaped the ſearches of curioſity or avarice, by the perpetual ſnows with which it is enveloped. The immenſe Uralian chain extends from about the 50th to near the 67th degree of N. latitude, or about 1000 G. miles in length, and has by the Ruſſians been called *Semenoi Poias*, or the girdle of the world,[4] an extravagant appellation, when we conſider that the chain of the Andes extends near 5000 miles. Some modern authors have imagined that this chain is the ſame with the Riphæan mountains of antiquity; which, on the contrary, as appears from Ptolemy and others, ran from E. to W. near the head of the Tanais or Don, and muſt of courſe have been only a foreſt running through the centre of Ruſſia, as the ancients often confounded mountains and foreſts under the ſame appellation. Pauda, one of the higheſt mountains of the Uralian chain, is reported by Mr. Gmelin to be about 4512 feet above the level of the ſea, an inconſiderable height, when compared with M. Blanc or M. Roſa. The central part of this chain abounds in metals, from Orenburg on the S. to the neighbourhood of Perm, where on the Aſiatic ſide are Venchoutury on the N., Ekatarinenburg on the S., places remarkable for opulent mines. The higheſt ridges are chiefly granite, gneiſs, and micaceous ſchiſtus, while the exterior hills of the chain on the W. are as uſual calcareous. Serpentine, jaſper, and trap, are alſo found, with argillaceous ſchiſtus, and other varieties, to be expected in ſo long a chain. The woods are chiefly pine, fir, birch, cedar, larch, aſpin, alder, and on the S. W. ſides are a few oaks, elms, and lindens. Ural.

European Ruſſia is ſo abundant in foreſts that it would be vain to attempt to enumerate them. There are prodigious foreſts between Peterſburg and Moſcow, and others between Vladimir and Arzomas. Further to the S. there ſeems to have been a foreſt of ſtill greater extent, probably as already mentioned the Riphæan foreſt of antiquity, Foreſts.

[4] Pennant, A. Z. i. 158.

in

Forests. in the direction of the rich black ſoil ſo remarkable for its fertility*.

Botany. When we conſider the vaſt extent of territory comprehended under the European ſovereignty of Ruſſia, from the frozen ſhore of Archangel to the delicious climate of the Crimea, and that the whole of this great empire has ſcarcely produced a ſingle naturaliſt of any eminence, all that is known of its vegetables, animals, and minerals, being collected for the moſt part within the laſt forty years by a few foreigners, under the munificent patronage of Catharine II, it will be evident that the rudiments alone of the Ruſſian flora can as yet be extant. The provinces bordering upon the Baltic, and the newly acquired government of Taurida, have been examined with ſome attention, and a few ſtriking features of the botany of the interior of the country have been deſcribed by travellers: but many years of patient reſearch muſt elapſe before the natural hiſtory of Ruſſia is advanced to an equal degree of accuracy with that of the weſtern parts of Europe.

The Ruſſian provinces N. of the Baltic, contain the ſame plants as thoſe of Swediſh and Norwegian Lapland, which will be hereafter deſcribed. Such as extend between the 50th and 60th deg. lat. abound principally in the common vegetables of the N. of France and Germany, ſome of which, however, are wanting, on account of the greater ſeverity of the Ruſſian winters from their proximity to the vaſt plains of Tatary and the foreſts of Siberia. The trees of moſt uſe and in greateſt abundance are Pinus abies, *the fir*; P. ſylveſtris, the *Scotch pine;* P. picea, the *yew-leaved fir;* and P. larix, the *larch:* all of which mingled together, form the vaſt impenetrable foreſts, whence the reſt of Europe is principally ſupplied with maſts, deals, pitch, and tar. The other foreſt trees are Ulmus campeſtris, the *elm*; Tilia Europæa, the *lime*, of the inner bark of which the Ruſſian mats are made, and from whoſe bloſſoms the immenſe ſwarms of wild bees collect the chief part of their honey; Betula alba, *the birch*; B. alnus, the *alder*; Populus

* Mr. Coxe, Travels in Poland, &c. vol. i. 323, 341, deſcribes the vaſt foreſt of Volkonſki, as beginning near Viaſma, and continuing almoſt to the gates of Moſcow, as he travelled through it without interruption for 150 miles. He ſays that the Volga, Duna, and Dnieper ariſe in this immenſe foreſt, which conſiſts of oaks, beech, mountain-aſh, poplar, pines, and firs, mingled together in endleſs variety.

 tremula,

tremula, the *aſpen*; Acer platanoides, the *greater maple*; and A. pſeudo-platanus, the *ſycamore*: of the ſhrubs and humbler plants, thoſe of moſt importance are Sorbus aucuparia, *mountain-aſh*, from whoſe berries by fermentation and diſtillation an ardent ſpirit is obtained; Rubus chamœmorus, the *cloudberry*; Vaccinium oxycoccos, the *cranberry*; Arbutus uva urſi, the *bearberry*; and Rubus ſaxatilis, the *ſtone bramble*; the fruit of all which, for want of better, is highly eſteemed, and is either eaten freſh or is preſerved in ſnow during the winter: Cornus herbacea, the *dwarf cornel*; Angelica archangelica, the *Angelica*, whoſe ſucculent ſtalks when candied form a favourite conſerve with moſt of the northern nations: Juniperus communis, the *juniper*; as well as the following vegetables, moſt of which are either found only in our flower gardens, or are of rare occurrence in a truly wild ſtate in Britain, Menyanthes nymphoides, *fringed water-lilly*; Campanula pyramidalis, *pyramidal bell-flower*; Malva alcea, the *holly-hock*; Dracocephalum moldavica, *Moldavian balm*; Oenothera biennis, *evening primroſe*; Nigella arvenſis, *fennel-flower*; Daphne mezereum, *mezereon*; Anemone hepatica, *hepatica*; Linnæa borealis; Calla paluſtris; and Fumaria bulboſa, *bulbous-rooted fumitory*.

Quitting the pine foreſts of the N. and middle of Ruſſia, if we turn our attention to the few vegetable productions that have as yet been noticed amidſt the myriads that adorn and enrich the broad vales of the Don and the Dneiper, that glow upon the warm ſhores of the Black Sea, or luxuriate in the delicious receſſes of Taurida, we ſhall ſee what a rich harveſt is reſerved for future naturaliſts, and with what eaſe the inhabitants, when once become civilized, may avail themſelves of the uncommon bounties of their ſoil. Here riſes in ſtately majeſty for future navies the oak, both the common kind and the ſpecies with prickly cups, Quercus cerris; the *black* and the *white poplar*, Populus nigra and alba, of unuſual ſize, ſkirt along the margins of the ſtreams: the *aſh*, Fraxinus excelſior; the *horn-beam*, Carpinus betulus; the *nettle-tree*, Celtis auſtralis; occupy the upland paſtures, and the elegant *beech*, Fagus ſylvatica, crowns the ſummits of the limeſtone ridges. Of the fruit-bearing ſhrubs and trees, beſides the various ſpecies of ribes, the *gooſeberry*, the *red*, the *white*, and the *black currant*, which are diſperſed

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Botany. in abundance through the woods, there are Amygdalus communis and perſica, the *almond* and *peach*; Prunus armeniaca and fruticoſa, the *apricot* and *crab-cherry*; Meſpilus germanica, the *medlar*; Juglans regia, the *walnut*; Morus Tatarica, nigra, and alba, the *Tatarian, black* and *white mulberry*; Olea Europæa, the *Olive*; Piſtachia terebinthus, the *Chio turpentine-tree*; Corylus avellana, the *hazle nut*: Berberis vulgaris, the *barberry*; Ficus carica, the *fig*; Vitis vinifera, the *vine*; and Punica granatus, the *pomegranate*. Of the ornamental ſhrubs and plants the following are the moſt diſtinguiſhed, Elæagrus anguſtifolius; Amygdalus nana, the *dwarf almond*; Prunus laurocerafus, the *laurel*; Meſpilus pyracantha, the *pyracantha*; the elegant ſpiræa crenata; Lonicera tatarica, the *Tatarian honeyſuckle*; Robinia fruteſcens, the *ſhrubby robinia*: Juniperus ſabina, ſavin; Láurus nobilis, the *bay-tree*; Jaſminum officinale and fruticans, the *common and ſhrubby jaſmine*; Rhus coriaria, the *ſumach*; and Tamarix pentandra, the *tamariſk*.

Zoology. The zoology of Ruſſia is vaſt and various, and only a very ſlight ſketch can here be attempted. The more peculiar animals are the ſea bear of Novaia Zemlia, and the ſouſlik of the S. In the more northern parts are found the wolf, the lynx, the elk; nor is the camel unknown in the lower latitudes The animals in the centre ſeem common to the reſt of Europe. Among the more uſeful animals the horſe has met with deſerved attention, and the breed in many parts of the empire is large, ſtrong, and beautiful. Near Archangel are found poneys, or ſmall horſes, as in the northern latitudes of the Britiſh dominions; but Lithuania produces ſteeds of great ſtrength, while thoſe of Livonia excel in ſpeed; the ſpirit and beauty of the Tatarian horſes have been long celebrated, and have been improved in Taurida by the introduction of Turkiſh and Arabian ſtallions. Yet numbers of horſes are annually imported at Peterſburg.

Even the country near Archangel is remarkable for excellent paſturage and fine cattle, which may be ſaid in general to abound in the empire. The ſheep in the northern provinces are of a middle ſize, ſhort-tailed, and the wool coarſe; nor is proper attention paid towards improving the breed. Thoſe in the S. are long-tailed, and yield a ſuperior wool; but the beſt is from the ancient kingdom of Kazan, and other regi-

ons in the eaſt of European Ruſſia. The iſlands of Oeſel and Dagho have an excellent breed, with wool equal to the Engliſh. In Taurida it is ſaid that common Tatars may poſſeſs about 1000 ſheep, while an opulent flock is computed at 50,000: thoſe of the whole peninſula were ſuppoſed to amount to 7,000,000. The mutton excellent, but the wool coarſe, though the lambs' ſkins be valued for their fur. Goats and ſwine alſo abound throughout European Ruſſia; nor is the rein-deer unknown in the furtheſt N.; ſo that the empire may be ſaid to extend from the latitude of the rein-deer to that of the camel. Zoology.

The chief mines belonging to Ruſſia are in the Aſiatic part of the empire, but a few are ſituated in the European, in the mountains of Olonetz; and there was formerly a gold mine in that region near the river Vyg. In the reign of Ivan Baſilowitz, the Engliſh in 1569, obtained the privilege of working mines of iron, on condition that they ſhould teach the Ruſſians this metallurgy. During the reign of Alexis, the firſt regular mines were eſtabliſhed in Ruſſia, about 60 miles from Moſcow, and they are ſtill continued: but Peter the Great was the founder of the Ruſſian mineralogy, by the inſtitution of the College of mines in 1719; and copper and iron were ſucceſsfully wrought in the territory of Perm. About 1730 the rich mines began to be diſcovered in the Aſiatic part of the empire, the deſcription of which is reſerved for the ſecond volume of this work. In 1739 gold was firſt obſerved in the chain of Olonetz, as already mentioned; and the mines of Voytzer near the Vyg were opened, but with little ſucceſs, as they only yielded about 57 pounds of gold in the year, which hardly recompenſed the price of labour[5]. This noble metal ſeems to require the full power of the ſun; and gold mines have rarely ſucceeded at a diſtance of more than 50° from the equator. Mineralogy.

European Ruſſia being a plain country can boaſt of few mineral waters. There is a hot ſpring near Selo Klintſchy, in the government of Perm: and a noted chalybeate in the village of Buigova in the diſtrict of Olonetz, called St. Peter's Well, by Peter the Great, who erected near it ſome houſes and a church. The ſoil is ſo ſtrongly impregnated with iron, that roots of trees and other vegetable ſubſtan- Mineral Waters.

[5] Tooke iii. 402, &c.

Mineral Waters.

ces have been often found, converted as it were, into ores of that metal. But the moſt celebrated is near Sarepta on the Volga, diſcovered in 1775. The ſprings are here numerous and copious, and ſtrongly impregnated with iron. In the diſtrict of Perekop, and on the iſle of Taman, belonging to the government of Taurida, there are ſprings of Naphtha[6].

Natural Curioſities.

The natural curioſities of Ruſſia in Europe have ſcarcely been enumerated, except thoſe which indicate the ſeverity of winter in ſo northern a clime. Not to mention the rocks of ice, of many miles in extent and ſurpriſing height, which navigate the frozen ocean, adorned like cathedrals with pinnacles, which reflect a thouſand colours in the ſun, or Aurora Borealis; it is well known that the empreſs Anne built a palace of ice, on the bank of the Neva, in 1740, which was fifty-two feet in length, and when illuminated had a ſurpriſing effect. The thirteen cataracts of the Nieper, about 300 miles above its eſtuary, are compoſed of ſucceſſive banks of granite, which project through the bed of the river; and in the government of Olonetz other curious cataracts may be found. In the ſame region, near thoſe mountains which abound with iron, are found various fragments of birch trees and other vegetables mineralized by that metal, while the texture of the wood remains viſible, and the tender white rind, which ſtrongly reſiſts corruption, preſerves its original appearance. The ſoil is changed into ferruginous earth, and the graſſy ſod becomes iron ore[7].

RUSSIAN ISLES.

The ſmall iſle of Cronſtadt, in the gulph of Finland, was formerly called Retuſavi, and is only remarkable for an excellent haven, ſtrongly fortified, the chief ſtation of the Ruſſian fleet. In the Baltic, Ruſſia alſo poſſeſſes the iſlands of Oeſel, and Dago, which are of a conſiderable

[6] Tooke, i. 283. [7] Ibid, i. 109.

ſize

ſize but full of rocks: the marble of the firſt iſland is however beautiful. Both iſles are chiefly peopled by Eſtonians. Russian Isles.

There are ſeveral iſles near the ſhore of Ruſſian Lapland, and in the White ſea, but generally barren and uninhabited rocks. Novaya Zemlia, or the New Land is alſo uninhabited, and is ſaid to conſiſt of five iſles, but the channels between them are always filled with ice.[8] Seals, walruſes, arctic foxes, white bears, and a few rein deer, conſtitute the zoology of this deſert; and are occaſionally hunted by the people of Mezen. To the ſouth of Novaya Zemlia is the ſea of Cara, (Karſkoye) in which the tide flows about two feet nine inches. Novaya Zemlia.

The remote and dreary iſlands of Spitzbergen having been taken poſſeſſion of by the Ruſſians, they may be here briefly deſcribed. This country has by ſome been ſtyled New Greenland, a name which accurately belongs to the weſtern ſide of Greenland proper, in North America, while the eaſtern ſide is called Old Greenland, as having been anciently planted by the Danes, though ſince blocked up by ice. The main land of Spitzbergen extends about 300 miles, from the ſouth cape, lat. 76° 30', to Verlegan-Hook, lat. 80° 7'. In an adjacent ſmall iſle are ſaid to be baſaltic columns, from 18 to 20 inches in diameter, and moſtly hexagonal[9]. Driftwood is frequent in theſe northern latitudes, partly perhaps from the banks of the Ob, and partly from America, there being a ſtrong current from the Weſt-Indies to the N. E. Spitzbergen is ſuppoſed to have been firſt diſcovered by the Dutch navigator Barentz in 1596. The mountains are of granite and grit, the higheſt not exceeding 4000 feet; for mountains in general decline in height towards the poles. The icebergs, or glaciers, in the N. E. of Spitzbergen, preſent a ſingular appearance, being high cliffs of an emerald colour, impendent over the ſea, with cataracts of melted ſnow, and a back ground of black conic hills ſtreaked with white. The ſea itſelf contains mountains of ice, formed by aggregation; a large field forcing a ſmaller out of the water till it lodge upon the ſuperior ſurface, and the height is afterwards increaſed by the ſnow, till it ſometimes riſe to 1500 feet. The ſnow in theſe high latitudes often falls Spitzbergen

[8] Pennant, Arc. Zool. clx. [9] Ibid. cxxxii.

Russian Isles.

as hard, and minute as fine ſand. About the firſt of November the ſun ſets, and appears no more till the beginning of February; and after the beginning of May it never ſets till Auguſt. Coals are found in Spitzbergen, but even the vales are covered with eternal ice or ſnow. The only tree is the dwarf willow, which riſes to the height of two inches, towering with great pride above the moſſes, and lichens, and a few other cumbent plants. Here are found polar bears, foxes, and reindeer, with walruſes, and ſea'ſ. There are a few kinds of water fowl; but the whale is the lord of theſe ſhallow ſeas. The Ruſſians from Archangel maintain a kind of colony; and that northern region ſeems indeed to have a natural right to Spitzbergen. To the N. E. of this dreary groupe are the ſmall iſles, called the Seven Siſters, the moſt arctic land yet diſcovered; and the dangers which Mr. Phipps, afterwards Lord Mulgrave, ſuffered near the Seven Siſters are well deſcribed in the account of his voyage.

AUSTRIAN DOMINIONS.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Preſent Boundaries.—Hiſtorical Epochs and Antiquities.

THE dominions ſubject to the houſe of Auſtria embrace many ancient kingdoms and ſtates, which, for the ſake of perſpicuity, are here brought under one point of view; it having been urged as a reproach to modern geography, that by the obſtinate retention of antiquated diviſions, and the confuſed minuteneſs of ſeparate deſcriptions, it has not made an uniform progreſs with modern hiſtory, and politics, which it ought to illuſtrate. Hence, to uſe the preſent inſtance, many are led to imagine that the power of the houſe of Auſtria is chiefly founded on its bearing the imperial title, whereas, if reduced to the regal ſtyle of Hungary, its hereditary domains entitle it to rank among the chief European powers, being of wide extent, and great importance, and boaſting a population of not leſs than 20,000,000, more concentrated than the diffuſe population of Ruſſia, and perhaps the next power to France, not in arms only, but on the broad and deep-rooted baſis of compact numbers of inhabitants.

In deſcribing a ſovereignty, thus compoſed of many ancient ſtates, it may ſeem proper to pay the firſt and chief attention to that part which gradually ſpread its domination over the reſt, or in other words,

that which was the earlieſt important inheritance of the ruling family. The remaining provinces will of courſe be conſidered in proportion to their real and laſting importance; while the more minute diſtricts may be abandoned to the ſedulous care and microſcopic labour of the topographer. On this plan the provinces that will here require particular obſervation are the archduchy of Auſtria; the kingdoms of Hungary, and Bohemia; the grand-duchy of Tranſylvania, which, with the Buckovina, may be regarded as belonging to Hungary; the dominion towards the Adriatic, with the acquiſitions of Venice, and Dalmatia; and laſtly that part of Poland which has fallen under the Auſtrian ſceptre.

Names.

The archduchy of Auſtria may be conſidered as belonging, in part, to ancient Pannonia, the Vindobona of the Romans being the modern Vienna. But that half of Auſtria, which lies north of the Danube, was occupied by the Quadi, a barbaric nation, who anciently infeſted the adjoining provinces of Pannonia and Noricum; for the weſtern part of Auſtria, on the S. of the Danube, falls under the latter ancient appellation. The German name and diviſion of Oſterich*, or the eaſtern kingdom, ſoftened into Auſtria by the Italian and French enunciation, aroſe after Charlemagne had eſtabliſhed the weſtern empire, being a remnant of the ſovereignty of what was called Eaſtern France, eſtabliſhed by that conqueror. It was alſo ſtyled *Marchia Orientalis*, the eaſtern march, or boundary: and after the failure of the Francic line became a marquiſate feudatory to the dukes of Bavaria, till the emperor Frederic Barbaroſſa, in 1156, conſtituted it a duchy held immediately of the empire.[1] Hungary, a part of which belonged to ancient Dacia, derives its modern appellation from the Ugurs, a nation of Turkomanic, or Tataric origin, who, after ſpeading devaſtation through a great part of Germany, fixed their reſidence here in the tenth century; the writers of the middle ages, confounding their real ap-

* Several of the German names of Auſtrian provinces differ conſiderably from our appellations: Carinthia is *Carnten* (Brown, 125); Carniola, *Krain*; Stiria, *Steyermark*; Croatia, *Crabaten*; Bohemia, *Boehmen*; Moravia, *Mæhren*. Galitz, or Galitzia is wrongly ſtyled Galicia.

[1] D'Anville, Etats formés en Europe, p. 51.

pellative

pellative with that of the Huns, a different and here extinguiſhed nation, who had formerly poſſeſſed this province. In the time of Charlemagne it was poſſeſſed by the Avars, a Slavonic people.[2] The Hungarians ſtyle themſelves Magiar; and their language approaches to the Finnic dialect. Bohemia, or the habitation of the Boii, was a central province of Barbaric Germany, afterwards ſeized by a Slavonic tribe, whoſe chiefs were originally ſtyled dukes of Bohemia. Tranſylvania, and the Buckovina* are parts of the province of Dacia, founded by Trajan. The former is by the Hungarians called Erdeli: by the Germans Sieben-burgen, or the Seven towns, from a colony there eſtabliſhed: the more common name ſeems derived from the woody paſſes of the Carpathian mountains, and was impoſed by the monkiſh writers. Venice, as is well known, derives its appellation from the ancient Veneti of the oppoſite ſhore. The origin of the other names becomes difficult, in exact proportion to their unimportance; and is more fit for the inveſtigation of the antiquary, than for the preſent deſign. NAMES.

From the frontiers of Swiſſerland, to the utmoſt limits of Tranſylvania, the length of the Auſtrian dominions may be about 760 Britiſh miles; the breadth about 520, from the river Bug, which forms a boundary between Auſtria and Pruſſian Poland, to the Save, which divides the Auſtrian from the Turkiſh ſovereignty. The acquiſition of Venetian Dalmatia may probably ſoon be followed by the junction of thoſe Turkiſh provinces, which divide that province from the Auſtrian domain. The ſquare contents may be about 184,000 miles. Boetticher eſtimates the inhabitants at 108 to a ſquare mile; but ſince he wrote, the Netherlands, a populous region, ſeem to be withdrawn from the houſe of Auſtria, yet the Venetian territories diſplay a population little inferior. EXTENT.

Towards the E. the Auſtrian dominions border on thoſe of Ruſſia and Turkey, and to the N. on thoſe of Pruſſia, Upper Saxony,

[2] Gibbon, x. 204.

* This province became ſubject to Auſtria in 1777, and was annexed to Galitz. Inhabitants about 130,000, who ſpeak Poliſh, and German: Religion, Roman Catholic.

Bavaria,

Extent. Bavaria*, and Swabia. On the utmoſt W. are Switſerland and Italian ſtates.

Original Population. The original population of theſe extenſive regions is various, but chiefly Gothic and Slavonic. The native ancient Germans, a Gothic race, form the ruling, moſt induſtrious, and moſt important part of the inhabitants. Bohemia and Moravia were originally Slavonic kingdoms; and the people of Poland and Hungary may be generally referred to the ſame origin; for in the latter kingdom the Magiars, or Ugurs†, who uſe a dialect approaching the Finniſh, did not ſupplant the Slavons, whom they found in the country; and who, on the fall of the Roman empire, had ſucceeded the Dacians, a Gothic race. The Venetians, and adjacent Italians, may be conſidered as genuine deſcendants of the Ciſalpine Gauls, and of the Roman colonies eſtabliſhed amongſt them. In ancient deſcent no genealogy can vie with that of ſeveral Venetian families, which can be traced by hiſtory and record to the eighth century.

Progreſſive Geography. The progreſſive geography of the ſouthern part of the Auſtrian dominions commences at an early period. Yet the Adriatic was not a favourite ſea of the Greeks; and the Roman writers throw the firſt ſteady light upon theſe regions. Paſſing from Ciſalpine Gaul, in defiance of the barriers of the Rhætian, and Carnic, or Julian Alps, now the mountains of Tyrol, Carinthia, and Carniola, the Roman generals ſubdued many barbarous tribes; and founded the provinces of Noricum,

* Since 1779 the boundary between Auſtria and Bavaria is the river Inn, with part of the Salza, a ſmall diſtrict being acquired by Auſtria, which is called the Inn-Viertel.

The county of Gorz, with ſome ſurrounding territory extending on the weſt of the river Judri, is called Friaul, or the Auſtrian Friuleſe, in the maps publiſhed at Vienna 1796. With the Venetian territory Auſtria acquired the iſles in the Adriatic, and the coaſt from Zara to Narenta, &c. The iſle of Veglia is of ſmall account. Cherſo, and Oſero, being only divided by a narrow ſtrait, are regarded as one iſle, woody and fertile: Pago is barren: Iſola Groſſa, and ſome of the others more fertile: Leſina is remarkable for the fiſhery of *Sardines*; Curzola ſerved the Venetians as an arſenal of ſhip timber. Meleda, and ſome ſmaller iſles, belong to the republic of Raguſa. The deſcription of Dalmatia by the Abbé Fortis is feeble, confuſed, and prolix: the beſt is that by Lucius, Amſt. 1668 fol. which alſo contains the original hiſtorians. The perpetual cuſtom of modern travellers in purſuing beaten routes prevents many diſcoveries, and obſtructs the progreſs of geography. Of this coaſt for inſtance, and the weſt of Greece, our knowledge remains imperfect.

† Whence perhaps the terrible *Ogres*, and *Ogreſſes* of heraldry, which commenced ſoon after the cruel incurſions of theſe people.

and

and Pannonia, their moſt northern acquiſitions in this quarter, till Trajan added Dacia. The Rhætians were ſubdued by Druſus, in the reign of Auguſtus, under whoſe ſway, or rather in the time of his ſucceſſor Tiberius, Pannonia and Noricum alſo became provinces of the Roman empire. Concerning thoſe regions much information may be derived from the luminous page of Tacitus; and ſoon after, the geography of Ptolemy opens additional illuſtrations. The common reſources of ancient geography are continued by the Byzantine writers; and, after the age of Charlemagne, by many hiſtorians of the weſt. Since the invention of printing to the preſent period, the geography of theſe extenſive provinces has been gradually improved, though not with the rapidity which might have been expected, as they unfortunately have not produced many men of acute genius, extenſive learning, or exact ſcience; and the beſt accounts are derived from writers in the N. of Germany, or from foreign travellers.*

Progreſsive Geography.

The hiſtorical epochs of various kingdoms and ſtates, recently united under one ſovereignty, muſt of courſe be ſubdivided into their original diſtinct portions, beginning in the order above-mentioned, with the firſt important ſtate, around which, as a nucleus, the others are conglomerated; but proceeding thence to the other provinces, according to their modern extent, and importance.

Hiſtorical Epochs.

1. The houſe of Auſtria, which, by ſucceſſive fortunate marriages ſince the fifteenth century, has ariſen to ſuch a ſummit of power, is well known to have ſprung from the humble counts of Hapſburg. Thoſe lords poſſeſſed a ſmall territory in Swiſſerland, in the northern corner of the canton of Bern, near the river Aar, about three miles S. of the town of Bruck, and the ſame diſtance to the N. of Mellingen.[3] On a lofty eminence, crowned with beech, ſtands an ancient tower, the firſt ſeat of the houſe of Auſtria. In the twelfth century Otho is deſigned count of Hapſburg, and even heraldry can ſcarcely aſcend beyond his grandſire Radebot, brother of Werner, biſhop of Straſburg.

* Even one of the laſt maps of Hungary, that by the Artarian ſociety, Vienna, 1792, is meanly executed, and very defective in diſplaying the chains and altitude of mountains, which are laid down as they might have been a century ago.

[3] Coxe's Swiſſerland, i. 135.

Historical Epochs.

In 1273 Rodolph of Hapſburg was called to the imperial throne, after an inter-reign, during which the German potentates had increaſed, and ſecured their own power; and wiſely prefered a nominal ſovereign, whoſe humble extract, and ſmall poſſeſſions, could afford no check to their ambition. Yet Rodolph was at this time lord of the greater part of Swiſſerland; after the extinction of the powerful houſe of Zaeringen, and that of the counts of Kyburg, whoſe joint inheritance devolving to Rodolph, became the baſis of his power, and that of his ſucceſſors.[a]

2. Another emperor of the houſe of Auſtria appeared in Albert, A. D. 1298; from whom the Swiſs made their ſignal revolt in 1307. His ſon Frederic was obliged to yield the empire to Louis of Bavaria.

3. Albert II duke of Auſtria, A. D. 1438, ſucceeded to three crowns, on the death of his father-in-law the emperor Sigiſmond, thoſe of Hungary, and Bohemia, and that of the empire by unanimous election. This was the epoch of the laſting grandeur of the houſe of Auſtria. Yet his ſucceſſors Frederic III, and Maximilian I, were feeble princes; and Charles V firſt aſtoniſhed Europe with a real diſplay of Auſtrian power.

4. Maximilian having married the heireſs of Burgundy, the Netherlands became ſubject to the houſe of Auſtria in 1477; and his ſon Philip, in 1496, marrying the heireſs of Arragon and Caſtile, the ample dominions of Spain fell afterwards under the Auſtrian ſceptre. Charles V inherited all theſe domains; but on his reſignation Spain and the Netherlands paſſed to his ſon Philip II, and the former crown continued in the Auſtrian line till the cloſe of the ſeventeenth century. Auſtria, Bohemia, and Hungary, paſſed to Ferdinand the brother of Charles V, who was alſo choſen emperor of Germany.

5. The noted bigotry of the houſe of Auſtria was not confined to the Spaniſh branch, for though Maximilian II, about 1570, had granted liberty of conſcience even to the proteſtants of Auſtria, yet thoſe of Bohemia, and other parts, were afterwards ſo much oppreſſed, that the proteſtant princes of Germany called in Guſtaf Adolf, the celebrated Swediſh monarch, to their aſſiſtance, who ſhook the empire to its very foundations. Even France ſupported the proteſtants, in the view

[a] Planta's Swiſſ. i. 170.

of

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of weakening the Auſtrian power; and the war continued till 1648, when the famous treaty of Weſtphalia was ſigned, which has ſerved as a baſis for other diplomatic tranſactions.

6. The war with France was often rekindled during the long reign of Leopold I, 1658, to 1705; and in 1683 the Turks were ſo ſucceſsful as to lay ſiege to Vienna.

7. His ſon Joſeph I joined the allies againſt France, and ſhared in their ſucceſs. He married the daughter of John Frederic duke of Hanover.

8. By the death of the emperor Charles VI, on the 20th October, 1740, without male iſſue, the houſe of Auſtria became extinct. The elector of Bavaria ſeized the kingdom of Bohemia, and was elected emperor in 1742, but died in 1745.

9. Francis of Lorrain, ſon of Leopold duke of Lorrain, having married Maria Thereſa, daughter of the emperor Charles VI, ſucceeded to the Auſtrian dominions, which continue to be held by his deſcendants. In 1745 he was elected emperor, and his ſucceſſors have enjoyed the imperial crown, as if hereditary. The powerful houſe of Lorrain is of great antiquity, deſcending from Gerard count of Alſace, in the eleventh century, whoſe origin is referred to a collateral branch of the houſe of Auſtria.

10. The reign of the emperor Joſeph II, a beneficent but impetuous prince, whoſe grand deſigns of reformation were fruſtrated by his ignorance of the inveteracy of habits and prejudices, which muſt ever be conſidered in a due eſtimate of human affairs.

11. The obdurate and ſanguinary conteſt with France, the events of which are known to all.

Having thus briefly marked the chief epochs of the Auſtrian power, the events of the ſubject kingdoms and ſtates muſt be as much compreſſed as poſſible. The next in importance are thoſe of the kingdom of Hungary.

1. The Roman province of Dacia. The conqueſt by the Huns; and afterwards by the Avars, and other Slavonic tribes.

2. The conqueſt by the Ogurs, or the Magiars, who continued under dukes from their firſt ſettlement in 884.

Historical Epochs.

3. St. Stephen firſt king of Hungary, A. D. 1000. The crown is partly elective, and partly hereditary; and among the chief hiſtorical events are the wars in Dalmatia, againſt the Venetians.

4. Louis I, ſurnamed the great, A. D. 1342, ſubdues a great part of Dalmatia, and carries his arms into Italy. He was ſucceeded by his daughter Mary, who was ſtyled *King* of Hungary; but dying 1392, the ſucceſſion became controverted, and at laſt terminated in the election of Sigiſmond, marquis of Brandenburg, who had wedded Mary the heireſs. In 1411 he was choſen emperor of Germany.

5. Albert of Auſtria having wedded Elizabeth the heireſs of Sigiſmond, was, with her, crowned king and queen of Hungary, 1438: an event which forms the earlieſt baſis of the Auſtrian claim to the Hungarian monarchy. Upon the death of Albert, Ladiſlas, king of Poland, is alſo choſen king of Hungary, but periſhes in the battle of Werna againſt the Turks. The famous John Hunniades is appointed regent of the kingdom.

6. On the death of another Ladiſlas, the poſthumous ſon of Albert of Auſtria, in 1457, the celebrated Mathias Corvinus, ſon of Hunniades, is proclaimed king of Hungary by the ſtates, aſſembled in the plain of Rakos, near Peſt. In 1485 he ſeized Vienna, and the other Auſtrian ſtates, and retained them till his death in 1490. Mathias was the greateſt prince who had ever held the Hungarian ſceptre, brave, prudent, generous, the friend of arts and letters, and a man of letters himſelf. He founded a magnificent library at Buda, and furniſhed it with the beſt Greek and Latin books, and many valuable manuſcripts.

7. After repeated conteſts, the houſe of Auſtria again fills the throne of Hungary, in the perſon of Ferdinand, 1527, but towards the end of his reign the Turks ſeized on the greater part of this kingdom. On his being choſen emperor of Germany, Ferdinand retained the crown of Hungary till 1563, when he reſigned it to his ſon Maximilian; and it has ſince continued a conſtant appanage of the houſe of Auſtria.

The grand-duchy of Tranſylvania was conſidered as a part of Hungary till 1540, when, in conſequence of a treaty between the Vaivod, and Ferdinand of Auſtria, Tranſylvania began to be regarded

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as a diſtinct ſtate. Stephen Battori having been elected prince of Tranſylvania in 15[illegible]1, that family continued to hold this petty ſovereignty till 1602, after which it continued ſubject to ſeveral elective princes, of whom the moſt diſtinguiſhed was Bethlem Gabor, or Gabriel Betlem, a noble Hungarian, and a Calviniſt, who conquered a great part of Hungary in 1619, and died in 1629. The laſt prince of Tranſylvania was Michael Abaffi, the ſecond of that name, who yielded the ſovereignty to the emperor in 1694, ſince which period this country has formed a part of the Auſtrian dominions.

The hiſtorical epochs of the kingdom of Bohemia deſerve more attention.

1. In the ſeventh century the Slavons ſeizing on Bohemia were ruled by chiefs, or dukes, ſeemingly hereditary, at leaſt after Borzivoi, who embraced Chriſtianity in the year 894. In the eleventh century Bretiſlas ſubdued the little adjacent kingdom of Moravia.

2. Vratiſlas duke of Bohemia is honoured with the regal title by the emperor Henry IV in 1086; who at the ſame time inveſted him with the domains of Luſatia, Moravia, and Sileſia. But this dignity was perſonal; and the conſtant title of king only dates from Premiſlas II in 1199. He and his immediate ſucceſſors, are ſtyled Ottocari, from their zeal in the cauſe of the emperor Otto.

3. One of the moſt renowned monarchs was another Premiſlas Ottocar, who aſcended the throne in 1253, ſeized Auſtria, and Stiria, and other provinces to the ſouth, and carried his arms into Pruſſia. In 1271 he refuſed the imperial crown, which was afterwards given to Rodolph count of Hapſburg, who inſiſting on the reſtitution of the Auſtrian ſtates, Ottocar ſaid that he had paid Rodolph his wages, and owed him nothing: for that count had been his marechal, or maſter of the horſe. A reconciliation was effected by matrimonial alliances, and by Ottocar's receiving the inveſtiture of Bohemia, and Moravia, on renouncing Auſtria, Stiria, and Carinthia. His ſon Wenceſlas was elected king of Poland; but refuſed the ſceptre of Hungary in favour of his ſon.

4. The ancient lineage having failed, John count of Luxembourg, who had married a daughter of Bohemia, became king in 1310, and

was

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was ſlain at the battle of Creci, fighting againſt the Engliſh in 1346. His ſon and ſucceſſor, Charles, was alſo emperor of Germany.

5. In the reign of Wenceſlas VI king of Bohemia, and emperor, John Huſs having read the books of Wickliffe the Engliſh reformer, introduced his doctrines into Bohemia. He was condemned to the flames in 1415. The Bohemians and Moravians have ſince become remarkable for various ſects of religion, and conſequent inteſtine commotions. The Huſſites under Ziſka, repeatedly defeated the troops of their king Sigiſmond, brother of Wenceſlas, and alſo emperor of Germany.

6. Albert of Auſtria, having wedded the daughter of Sigiſmond, received the crowns of Bohemia and Hungary. But the ſucceſſion was afterwards controverted and infringed by George Podiebrad, (a Huſſite chief, who obtained from the weakneſs of the emperor Frederic III of the houſe of Auſtria, the crown of Bohemia in 1459,) by Vladiſlas ſon of the Poliſh monarch, and by Mathias king of Hungary.

7. Louis, ſon of Vladiſlas, ſucceeded his father in the kingdoms of Bohemia and Hungary; but being ſlain at the battle of Mohatz, 1526, the crown finally paſſed to the houſe of Auſtria.

Of the provinces towards the Adriatic the hiſtory is little memorable, except that of Venice, a recent acquiſition. This ancient, and remarkable city was founded in the fifth century by the Veneti of the oppoſite ſhore, who fled from the incurſions of the barbarians. At firſt each iſle was governed by a tribune, till the year 697, when the firſt doge was elected. In the ninth and tenth centuries the government of the doges became nearly hereditary; but in the eleventh the election again became open. Towards the cloſe of the twelfth century the democratic form was ſucceeded by an election, and adminiſtration ſeverely ariſtocratic, and well known by its ſingularity, and ſtability. The Venetians having gradually extended their power along the Adriatic, in the year 1204, became maſters of ſeveral Grecian provinces, and iſlands; and after their conteſts with the Piſans, and Genoeſe, became the firſt commercial and maritime power in Europe, till the end of the fifteenth century, when the diſcovery of the Cape of Good

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Good Hope transferred the oriental traffic to the Portugueſe, who were ſucceeded in maritime exertion by the Spaniards and Dutch, and laſtly by the Engliſh, whoſe naval tranſcendancy exceeds all ancient or modern example. The authority of Venice declined with its commerce; and the republic may be ſaid to have expired of mere old age.

Antiquities.

The ancient monuments of the more northern kingdoms and provinces belonging to Auſtria, cannot be expected to be very numerous, or important. Vindobona, and the adjacent parts of Noricum and Pannonia, occaſionally diſplay Roman remains; but the ruins of the celebrated bridge of Trajan, over the Danube, belong to Turkey in Europe, being ſituated not far from Widin, in Bulgaria: it is ſuppoſed to have conſiſted of twenty arches, or rather vaſt piers of ſtone, originally ſupporting a wooden fabric of the length of more than 3,300 Engliſh feet. In Hungary, and other parts of the ancient province of Dacia, appear many relics of Roman power, as military roads, ruins, &c. and an elegant hiſtorian remarks "that if we except Bohemia, Moravia, the northern ſkirts of Auſtria, and a part of Hungary between the Teyſs and the Danube, all the other dominions of the houſe of Auſtria were ſituate within the limits of the Roman empire."[5] Hungary, and the other provinces of the Auſtrian dominions, having been frequently expoſed to the ravages of war, many ancient monuments have periſhed; yet ſeveral caſtles, churches, and monaſteries ſtill atteſt the magnificence of the founders.[6] The cathedral church of St. Stephen, in Vienna, is a gothic fabric of ſingular pomp, and minute decoration. The antiquities of Venice, and of the N. of Italy, and of Dalmatia have been repeatedly examined and deſcribed.

[5] Gibbon, vol. i. p. 22.

[6] Dr. Brown's Trav. part ii. p. 80.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.--Population.- Colonies.-- Army.—Navy.—Revenues.—Political Importance and Relations.

Religion. THE preponderant religion of the Auſtrian dominions is the Roman Catholic, but attended with a conſiderable degree of toleration. Proteſtants of various ſects are found in Bohemia, and Moravia; nor are Lutherans unknown at Vienna, though they chiefly abound in Tranſylvania,[1] nay in Hungary it is believed that the proteſtants are equal in number to the catholics.[2] Vienna did not become a metropolitan ſee till the year 1722: the archbiſhop is a prince of the holy Roman empire. The preſent ſtate of the eccleſiaſtic geography, the number and boundaries of the biſhopricks, &c. would require ſome inveſtigation not intereſting to the general reader.*

Government. The form of government is an hereditary monarchy, and approaching to abſolute power. For though Hungary retain its ancient ſtates, or rather an ariſtocratical ſenate, yet the dominions being ſo various and extenſive, and the military force wholly in the hands of the ſovereign, no diſtinct kingdom or ſtate can withſtand his will; and except moſt oppreſſive meaſures were purſued, there can be no general intereſt to league againſt him. Even Auſtria has its ſtates, conſiſting of four orders, clergy, peers, knights, burgeſſes; the aſſembly for lower Auſtria being held at Vienna, and that of the upper at Linz.[3] But thoſe local conſtitutions can little avail againſt the will of a powerful monarch, ſupported by a numerous army.

[1] Buſching, vi. 540. [2] Townſon, 181.

* Hungary, the principal province, contains two archbiſhopricks and fifteen biſhopricks, including Boſnia and Croatia. The archbiſhop of Gran has about 36,000l. a year, the others do not exceed 8,000l.—Townſon, i. 137.

[3] Buſching, vi. 536. laſt French edition.

The

Laws.

The laws vary according to the different provinces, almoſt every ſtate having its peculiar code. The Hungarians in particular have vigorouſly defended their ancient laws, though in many inſtances illaudable, the peaſantry being in a ſtate of villanage till 1785.[4] Yet what is called the *Urbarium*, publiſhed by the empreſs Thereſa in 1764, attempted with ſome ſucceſs to define the rights of the landlords, and of the peaſants, and was received for law. In 1786 Joſeph II, after ſuppreſſing villanage in Bohemia and Moravia, extended the like freedom to Hungary; and this decree remains uncancelled, though many of the laws of that well-meaning but injudicious monarch expired with their author. Yet the boaſted freedom of Hungary is rather that of a powerful ariſtocracy, than of the people at large. In general the laws may be regarded as mild and ſalutary; and the Auſtrians in particular are a well regulated and contented people, while the Hungarians are often diſſatisfied, and retain much of their ancient animoſity againſt the Germans. As Hungary is the moſt important province of the monarchy, it might perhaps have been more prudent to have there eſtabliſhed the royal reſidence and ſeat of power, had not the repeated ſubjugation of a great part of that kingdom by the Turks rendered ſuch a deſign precarious.

Population.

The general population of the Auſtrian dominions is computed at more than 20,000,000; that of Hungary, Tranſylvania, and the Buckovina, being eſtimated at four millions and a half. Yet ſome authors compute the population of Hungary alone at 7,000,000; and a late German author has in conſequence ſwelled the general population of the Auſtrian dominions to 25,000,000.[5] Hence, upon the whole, it will be reaſonable to allow 23,000,000 as a medial computation of the numbers ſubject to the Auſtrian ſceptre.

Of the other chief provinces, Bohemia is ſuppoſed to hold two millions and a half; and Moravia one million and a half. The whole acquiſitions in Poland may contain more than three millions; the Italian dominions probably two; while the archduchy of Auſtria is computed at 1,685,000.

[4] Townſon, 102. 107.

[5] See Townſon, chap. v.

Colonies. Till the acquiſition of Venice, Auſtria might have been regarded as an inland power, the ſmall harbour of Trieſte being little known in commerce. Hence no foreign colonies have been planted by the Auſtrians.

Army. The army is computed by Boetticher at 365,455 men, in 136 regiments, of which 46 are German, and only 11 Hungarian. This numerous army has been greatly diminiſhed in the ſanguinary conteſt with France; and perhaps could not, at preſent, equal that of Pruſſia, computed at 200,000; and far leſs that of the great military power of Ruſſia, doubling that number.

Navy. An Auſtrian ſhip of the line would be regarded as a novelty on the ocean; but the acquiſition of Venice will doubtleſs be followed by a navy.

Revenue. The revenue is computed at more than 10,000,000l. ſterling; to which Auſtria contributes about 3,000,000l., and Hungary a little more than a million and a half. This revenue uſed to exceed the expences; but the public debt now, probably, ſurpaſſes 40,000,000l. ſterling, and the recent wars have occaſioned great defalcations.

Political Importance and Relations. Vaſt are the political importance and extent of the relations of the Auſtrian ſovereignty. Setting aſide the conſideration of his influence, as emperor, over the German ſtates, the monarch may be regarded as an equal rival of France, and only inferior to the preponderance of Ruſſia. Since the Auſtrian dominions and power have been ſwelled to their modern conſequence, a determined rivalry has exiſted between them and France, which has, with reaſon, been jealous of the Auſtrian ambition. Alliances, even cemented by intermarriage, have not been able to overcome the oppoſition of intereſts; and England being alſo the rival of France, it has frequently become an unavoidable policy to maintain this diſſenſion. There are alſo cauſes of confirmed jealouſy between Auſtria and Pruſſia; and it is doubtful if even an invaſion from Ruſſia would compel them to unite in a defenſive alliance. The inveterate wars with Turkey, and the radical difference of religion and manners, more impreſſive from vicinity, have alſo ſown irreconcilable hatred between the Auſtrians and Turks; and the ambition of

Auſtria

Auſtria eagerly conſpires with Ruſſia againſt European Turkey. Amidſt ſo many enmities, and the neceſſary jealouſy of Ruſſian power, it would be difficult to point out any ſtate on the continent with which Auſtria could enter into a ſtrict and laſting alliance. The moſt natural and conſtant may be that with England, whoſe maritime power might inflict deep wounds upon any enemy; but againſt Ruſſia an alliance with Pruſſia would be indiſpenſable.* POLITICAL IMPORTANCE, &c.

* Since this chapter was at the preſs, an important work has come to hand, intituled *Aperçu Statiſtique des Etats de l'Allemagne; ſous le rapport de leur Etendue, de leur Population, de leurs Productions, de leur Induſtrie, de leur Commerce, et de leurs Finances; par Hoeck, Conſeiller de Juſtice du Roi de Pruſſe*, &c. Paris, An ix (1801), large folio. This work is certainly the moſt complete view, which has appeared, of the numerous and important German ſtates. But it is a great defect that there is no general ſum of the entire population, &c. &c. of each ſovereignty.

Bohemia is eſtimated at 2 806,493: Moravia 1,256 240: duchy of Auſtrian Sileſia 250,000: Auſtria 1,820,000: Stiria, &c. 1,645,000: Tirol 610,000: Hungary 6,315,000: Illyria 1,035,000: Tranſylvania 1,143 364: Galitz, &c. 2,797,119: Bukovin 130,000. That is, in all, little more than 20 millions, excluſive of Venice, &c.

In like manner the Commerce, Army, Square Miles, Finances, are only particularized under each ſubdiviſion, without general eſtimates, a plan which leads to perplexity and additional labour, though the work be highly valuable in other reſpects.

CHAPTER III.

CIVIL GEOGRAPHY.

Manners and Cuſtoms.—Language.—Literature.—Education.—Univerſities.—Cities and Towns.—Edifices.—Roads.—Inland Navigation.—Manufactures and Commerce.

MANNERS AND CUSTOMS.

VARIOUS are the manners and cuſtoms of the numerous kingdoms and provinces ſubject to the houſe of Auſtria. Vienna, the capital, preſents as it were an aſſemblage of nations, in their various dreſſes. In Auſtria proper the people are much at their eaſe: and the farmers, and even peaſantry, little inferior to thoſe of England. Travellers have remarked the abundance of proviſions at Vienna, and the conſequent daily luxury of food, accompanied with great variety of wines. The Auſtrian manners are cold, but civil; the women elegant, but devoid of mental accompliſhments, the only books they read being holy legends.[1] The uſe of rouge is univerſal, but moderate; and the dreſs is ſingularly ſplendid. They retain the abſurd faſhion, univerſal on the continent, of dreſſing little girls like women, with the high powdered head, and the hoop. The manners ſomewhat partake of the Italian and Spaniſh cicisbeiſm, forming in this reſpect a kind of medium between the profligacy of the ſouth of Europe and the decency of the north. The Auſtrian youth of rank are commonly ignorant, and of courſe haughty, being entire ſtrangers to the cultivation of mind, and condeſcenſion of manners, to be found among the ſuperior ranks of ſome other countries, a circumſtance more ſtriking to the Engliſh traveller in particular from the violence of the contraſt. An Auſtrian nobleman or gentleman is never ſeen to read, and hence polite literature is almoſt unknown and uncultivated; nor have the Auſ-

[1] Wraxall's Memoirs, ii. 240. &c.

trians

trians yet claimed any ſhare in its progreſs in Germany. Yet the emperor having long been conſidered as the higheſt power in Europe, the Auſtrians affect to conſider themſelves as ſuperior to other nations. It is to be regretted that a more rational mode of education is not followed, which would open their minds to the numerous delights and advantages ariſing from ſcientific purſuits, and deliver them from many vain ſuperſtitions, as they believe in ghoſts and familiar ſpirits, and in the idle dreams of alchymy. In conſequence of this ignorance the language remains unpoliſhed; and the Auſtrian ſpeech is one of the meaneſt dialects of the German, ſo that polite people are conſtrained to uſe French. The lower orders are, however, little addicted to crimes or vices, and puniſhments are rare: robberies are ſeldom committed, and murder little known. When capital puniſhment becomes unavoidable, it is adminiſtered with great ſolemnity, and accompanied with public prayers, an example worthy of univerſal imitation. Manners and Customs.

The next people in eſtimation, and the firſt in numbers, is the Hungarians. Their manners are now conſiderably tinctured by thoſe of the ruling Germans, but they remain a ſpirited people, and affect to deſpiſe their maſters. Their dreſs is well known to be peculiar, and is copied by our huſſars.[2] This dreſs, conſiſting of a tight veſt, mantle, and furred cap, is graceful; and the whiſkers add a military ferocity to the appearance. In other reſpects recent travellers do not ſeem to have been impreſſed with much diſtinction between the Auſtrian and Hungarian manners. The change introduced into thoſe of Venice by the Auſtrian domination has not yet been deſcribed. The Morlacs, and other inland tribes of Dalmatia, are honeſt and ſincere barbarians; and the dreſs of their Vaivods ſomewhat reſembles the Hungarian. Dalmatia being divided between the Greek and Catholic religions, they have grafted many ſuperſtitions upon both: but for a full account of their manners and cuſtoms, the curious reader muſt be referred to Fortis's travels in Dalmatia.[3]

The languages ſpoken in theſe aggregated dominions are numerous and diſcrepant. They belong chiefly to three grand diviſions, the Languages.

[2] In the Hungarian, *Huſzar* implies the twentieth, becauſe twenty peaſants are obliged to furniſh one horſeman to the cavalry. Buſch. iii. 56.

[3] P. 43—88

Gothic

Language. Gothic or German of the ruling nation, which will gradually exclude the others: the Slavonic of the Poles*, part of the Hungarians, the Dalmatians, &c. and alſo the ancient ſpeech uſed in Bohemia and Moravia: and laſtly the Hungarian proper, which has been conſidered as a branch of the Finnic. The Italian of courſe prevails in the ſtates of Italy that are ſubject to Auſtria: and the Tyroleſe, &c. uſe a mixture of Italian and German. Among people of rank at Vienna the French was formerly prevalent, as already mentioned; but this faſhion is perhaps impaired by recent events, and the uſe of the poliſhed German of Saxony would not only be more appropriate, but might tend to diffuſe a national taſte and native literature. Rieſbeck obſerves that in Swabia, Bavaria, and Auſtria, the German is very impure.

Literature. Excluſive of the Italian provinces, the literary hiſtory of the Auſtrian dominions cannot aſcend to a remote period. That of Auſtria proper, in particular, is little intereſting, and even the chronicles and lives of ſaints are comparatively recent. If the emperor Maximilian, grandfather of Charles V, be the author of an eccentric poem alluding to the events of his own life, and uſually aſcribed to him, though many aſſign it to his chaplain, he may be conſidered as the father of Auſtrian literature, as well as of Auſtrian greatneſs. But the ſucceſſion of authors is interrupted; and many of thoſe who flouriſhed at Vienna were aliens. Wolfgangus Lazius is but a dreaming antiquary: and in the ſame century Cuſpinian has ridiculed Haſelbach, the profeſſor of divinity, who having begun a courſe of lectures on Iſaiah, had not in twenty-one years finiſhed the firſt chapter. The like perverſity of taſte continues to modern times; and Rieſbeck has depicted in warm colours the metaphyſical abſurdities of the Auſtrian profeſſors, and the abject tone of ſlavery and flattery which pervades even the little ſolid literature that is known.† For at Vienna the emperor is conſidered as the ſucceſſor of Auguſtus, as abſolute monarch of Germany; while in the other provinces of that wide region, he is more juſtly regarded as a nominal head, though highly reſpectable as king of Hungary and Bohemia. In

* Nor is it diffuſed in Bohemia, which may be regarded as the extreme weſtern limit of the Slavonic *tongue*; for the *people* extend to the mouth of the Elbe.

† Travels, vol. i. 283.

the

the medical branch, Van Swieten, Storck, and others have acquired deſerved celebrity: but though Vienna ſwarm with pretended literati, or men who can talk and write nonſenſe in Latin, there are a few who have acquired a ſhadow of reputation, ſuch as Hell, Martini, Denis and Sonnerfels; yet the firſt was a Sileſian, and Denis from Bavaria. In antiquities occur the names of Froelich, and one or two other numiſmatic writers, who compoſe vaſt volumes upon ſmall ſubjects. LITERATURE.

Bohemia and Hungary have no ancient claims to literature. Coſmas of Prague, a venerable hiſtorian, flouriſhed about the year 1130; and Hungary has a cotemporary father of hiſtory in the anonymous notary of king Bela.[5] Yet the encouragement given to writers by the celebrated Mathias Corvinus little ſtimulated native literature, for Bonfinius was an Italian. Nor is there any Hungarian writer particularly celebrated among the modern Latin claſſics; nor the native language yet known by any work commanding celebrity. Baron du Born, a native of Tranſylvania, has written many able works in natural hiſtory; but he uſed the Latin and French languages. An enquiry into the cauſes which have retarded the progreſs of letters and philoſophy in the Auſtrian dominions, would be more uſeful than the bare enumeration of a few names: they would be found to ariſe partly from the coarſeneſs of the German dialect, and the abſence of the Slavonic and Hungarian from the learned languages of Europe; partly from numerous wars of ambition, which ſometimes endanger the very exiſtence of the ſtate; in yet greater meaſure from the military education of the nobility, or rather indeed from their ignorance, for many conſummate officers have been men of letters: but above all, this defect muſt be aſcribed to that metaphyſical bigotry, which perverts their rational powers, and blights every bud of genius and ſolid knowledge. The books prohibited at Vienna probably exceed in number thoſe of the Index Expurgatorius; and though the government have no doubt a right to watch over thoſe of a political tendency, yet this jealouſy needs not be extended to works of mere ſcience, written by heretics. On the other hand, ſome blame muſt doubtleſs extend to authors who introduce into ſcientific productions their political dogmata, and viſionary

[5] Katona, Hiſt. Crit. Hung. Proleg.

views

Literature. views of ſocial perfection, with attacks upon eſtabliſhed forms of worſhip and government, totally unlike the procedure of the ancient philoſophers, who were teachers of content and moderation. Yet a government ſhould ſelect the happy mean between that fanatic bigotry, which alike freezes literature and every branch of induſtry; and that licentiouſneſs of the preſs, which by wantonly ſapping perſonal reputation, and the laws, tends to deſtroy every habit of virtue, and can only lead to anarchy.

Education. The empreſs Thereſa inſtituted ſchools for the education of children, but none for the education of teachers. Hence the children are taught metaphyſics before they know Latin; and a blind veneration for the monks forms one of the firſt exertions of naſcent reaſon. Yet the example is highly laudable, and with all its diſadvantages may lead to important conſequences.

Univerſities. The univerſities, like thoſe in other catholic countries, little promote the progreſs of ſolid knowledge. The ſciences taught with the greateſt care are preciſely thoſe which are of the ſmalleſt utility. The univerſity of Vienna has, ſince the year 1752, been ſomewhat improved. It was founded in 1237, and that of Prague in 1347; that of Inſpruck only dates from 1677, and Gratz from 1585.[6] Hungary chiefly boaſts of Buda, though the Jeſuits inſtituted academies at Raab and Caſchau.* A late traveller[7] informs us that the univerſity of Buda, by the Germans called Offen, poſſeſſes an income of about 20,000l. ſterling, only 4,000 of which are applied to pay the ſalaries of the profeſſors. "Beſides the uſual chairs which exiſt in every univerſity, there are thoſe of natural hiſtory, botany, and œconomy. The collection of inſtruments for natural philoſophy, and the models of machines, are good; and the muſeum of natural hiſtory, which contains the collection of the late profeſſor Piller, beſides that of the univerſity, may be ranked among the fine collections of Europe." There is a Calviniſt college or univerſity at Debretzin: and the biſhop of Erlau has recently eſtabliſhed a ſplendid univerſity at that city.[8]

[6] Dufreſnoy, Methode Geog. iii. 271.

* The univerſity of Tyrnau has been recently transferred to Peſth. Townſon, p. 439.

[7] Townſon, p. 79. [8] Ib. 238. 225.

Cities and Towns. Vienna.

Vienna, the chief city of the Auſtrian dominions, lies on the S. or rather W. ſide of the Danube, in a fertile plain watered by a branch of that river, (beyond which ſtands the ſuburb of Leopold-ſtadt,) and by the little river Wien. The Danube is here very wide, and contains ſeveral woody iſles: the country towards the N. and E. level, but on the S. and W. hilly, and variegated with trees. It is founded on the ſite of the ancient Vindobona; but was of little note till the twelfth century, when it became the reſidence of the dukes of Auſtria, and was fortified in the manner of that age. The manufactures are little remarkable, though ſome inland commerce be tranſacted on the noble ſtream of the Danube. The number of inhabitants is computed at 254,000. The ſuburbs are far more extenſive than the city, ſtanding at a conſiderable diſtance from the walls. The houſes are generally of brick covered with ſtucco, in a more durable manner than commonly practiſed in England; the fineſt ſand being choſen, and the lime, after having been ſlacked, remaining for a twelvemonth, covered with ſand and boards, before it be applied to the intended uſe. The chief edifices are the metropolitan church of St. Stephen, the imperial palace, library, and arſenal, the houſe of aſſembly for the ſtates of lower Auſtria, the council-houſe, the univerſity, and ſome monaſteries. The prater, or imperial park, is an iſland in the Danube well planted with wood; and to the S. is the chapel of Herenhartz, which during Lent is much frequented for the ſake of amuſement, as well as of devotion. Proviſions of all kinds abound in Vienna, particularly wild boars, veniſon, and game; many ſmall birds rejected by us being included among the latter. Livers of geeſe are eſteemed a peculiar delicacy; nor are tortoiſes, frogs, and ſnails rejected.* The people delight in the combats of wild beaſts, and of bulls. In one of the ſuburbs is the palace of Belvidere, which formerly belonged to prince Eugene; and at the diſtance of a few miles ſtands Schonbrun, another imperial palace. Though Vienna be much expoſed to the northern and eaſtern winds, yet the ſouthern hills

* Rieſbeck, himſelf a German, blames the Auſtrians, i. 237, for gluttony, and a certain indefer babl· coarſe pride. Yet he highly praiſes the ſchools, p. 280. The richeſt ſubject by his account was Prince Lichtenſtein, who had about 90,000l. ſterling a year, while Eſterhazy only enjoyed 60,000.

Cities and Towns.

ſerve as a ſence againſt the rain, and the traveller rather complains of duſt than of moiſture. The pleaſantneſs of the environs in general is improved by the happy aſpect of the Auſtrian peaſantry.

Milan.

Next in importance to Vienna was Milan, the inhabitants of which were computed at more than 130,000. The loſs of Milan would be

Venice.

richly recompenſed by the acquiſition of Venice, ſuppoſed to contain 200,000 ſouls. The latter celebrated city, ſingularly ſituated in the lagunes, or ſhallows of the Adriatic ſea, and ſecured in a great meaſure from the fury of the waves by exterior ſhoals, which form a natural fortification on that ſide, has been ſo frequently deſcribed, that except new circumſtances could be added concerning the Auſtrian adminiſtration, it would be ſuperfluous to enter into any antiquated details.

The honour of the third city in the Auſtrian dominions muſt be

Prague.

claimed by Prague, the population being eſtimated at 80,000. This metropolis of Bohemia ſtands on both ſides of the river Mulda, over which there is a noble bridge of ſtone, founded in 1357. The fortifications are of ſmall moment; but the houſes are of ſtone, and commonly three ſtories in height. This city has had the fatality of being expoſed to frequent ſieges, commonly fortunate to the aggreſſors. About a ſixth part of the population conſiſts of Jews.

Gratz.

Next, though at a great diſtance, ſtands Gratz, the capital of Stiria, ſuppoſed to hold 35,000 ſouls. This city ſtands on the W. ſide of the river Muehr, joined by a bridge to an extenſive ſuburb on the oppoſite bank. There are regular fortifications; and on a bold rock near the river is placed a ſtrong citadel.

Preſburg.

Preſburg, the capital of Hungary, only contains about 27,000 inhabitants, its precedence being of modern date, after Buda the ancient capital had been repeatedly taken by the Turks.* Preſburg is beautifully ſituated on the Danube, towards the weſtern extremity of Hungary, being only about 35 Britiſh miles to the E. of Vienna; but the poſition is ſtill more uncentrical than that of Buda. The Danube is here very rapid, and about 250 yards in breadth. About one quarter of

* Townſon, 440. *Alba Regalis*, formerly celebrated, is now Stuel Weiſſenburg, 34 Br. miles S. W. of Buda. *Alba Græca*, or Gritchs Weiſſenburg, is Belgrade.

the inhabitants are Lutherans, who are ſo opulent as to pay about one half the taxes. A good theatre, and convenient coffee-houſes contribute to the pleaſure of the inhabitants. Jews alſo abound in this city. CITIES AND TOWNS.

Buda, by the Germans called Offen, the ancient metropolis of Hungary, is now reduced to little more than 20,000 inhabitants; but if the city of Peſth be included, which ſtands on the oppoſite ſide of the Danube, over which there is a bridge of boats, the population may be computed at 34,000. Dr. Townſon even allows 38,000. The chief public and private buildings are in Peſth, and within the fortreſs: the royal palace in particular is a large and ſtately edifice. At Buda there are hot ſprings; and the people, like thoſe of Vienna, delight in bull feaſts and exhibitions of wild beaſts. In 1784 the ſeat of the provincial government, and the public offices being reſtored from Preſburg to Buda, the latter joined with Peſth may ſtill be regarded as the capital of Hungary.[9] The mining cities of Schemnitz and Cremnitz do not exceed 8000 inhabitants each:* but Hermanſtadt, the capital of Tranſylvania, in latin *Cibinium*, from the river Cibin, is ſuppoſed to contain 17,000. It is the chief ſeat of the Saxon colony; but the air is unhealthy. The Buckovina, annexed to the Auſtrian territory in 1777, contains no town of conſequence. Buda, or Offen. Hermanſtadt.

That part of Poland which was acquired in 1772, and divided into two provinces, called Galitzia and Lodomiria, preſents Lemberg, or Leopold, of 20,000 inhabitants, and ſome other conſiderable towns. Among the Poliſh acquiſitions muſt alſo be named Cracow, anciently the capital of that kingdom, and eſtimated to contain 24,000 people. This city ſtands on the Viſtula and has a caſtle, but is poorly fortified. Cracow.

Brunn, in Moravia, is computed at 18,000, and Olmutz, in the ſame country, at 12,000; and the latter number is alſo aſſigned to Troppau, in the Auſtrian part of Sileſia. In the ſouthern provinces, Inſpruck and Trent are ſuppoſed each to contain 10,000 ſouls. Trieſte, which is reckoned at 18,000, deſerves more particular attention, having been for a long time the only ſea-port belonging to Auſtria. It is ſituated on a gulph of the Adriatic and riſes on an aſcent which is crowned by Trieſte.

[9] Townſon, p. 90. * Hoeck puts Cremnitz at 4000.

Cities and Towns.

a caſtle. The ſhipping is ſecured by a wall, extending from the Lazaretto to the iſle of Zuka; and the harbour was declared free by the empreſs Thereſa. The neighbourhood produces excellent wines.

Some towns in the Auſtrian part of Italy, and in Dalmatia, might here deſerve notice, were there not uncertainties concerning the duration of the ſubjection to Auſtria. The chief public edifices are at Vienna, Buda, and Peſth, to which may now be added Venice; but there are many ſplendid churches and monaſteries in the ſeveral regions of the Auſtrian domination. Many of the Hungarian nobility, who have vaſt eſtates, poſſeſs caſtles of correſponding magnificence. Among theſe the chief are the Paleſy, Schaki, Erdoby, Sichy, Forgatſh, Kohari, Karoly; but above all Eſterhazy, whoſe caſtle, about a day's journey from Preſburg, is ſaid to rival Verſailles in pomp; and ſeems alſo to rival that palace in the ſurrounding deſolation, being in a moraſſy country near the Neuſidler lake.[10]

Edifices.

Inland Navigation.

The utility of inland navigation ſeems to be little perceived in the Auſtrian dominions; and even the noble canals in the Auſtrian Flanders have ſuffered by ſtrange neglect. The long navigable courſe of the Danube may, in ſome meaſure, apologize for this deficiency; but there is no doubt that the greateſt advantages might be derived by opening canals in ſome of the provinces, particularly towards the Adriatic, and in Hungary.

Manufactures and Commerce.

Nor do manufactures ſeem to be cultivated to a great extent in any part of the Auſtrian dominions. Vienna perhaps equals any other of the cities in manufactures, which are chiefly of ſilk, gold and ſilver lace, cloths, ſtuffs, ſtockings, linen, mirrors, porcelain; with ſilver plate, and ſeveral articles in braſs[11]. Bohemia is celebrated for beautiful glaſs and paper. But the commerce of the Auſtrian dominions chiefly depends upon their native opulence; Auſtria proper and the ſouthern provinces producing abundance of horſes and cattle, corn, flax, ſaffron, and various wines, with ſeveral metals, particularly quickſilver from the mines of Idria. Bohemia and Moravia are alſo rich in oxen and ſheep, corn, flax, and hemp; in which they are rivalled by the diſmembered provinces of Poland. The wide and marſhy plains of

[10] Richbeck, ii. 49. 66.

[11] Buſching, vi. 549. See Hoeck.

Hungary

Manufactures and Commerce.

Hungary often preſent excellent paſturage for numerous herds of cattle; and the more favoured parts of that country produce corn, rice, the rich wines of Tokay, and tobacco of an exquiſite flavour, with great and celebrated mines of various metals and minerals. The Auſtrian territories in general are ſo abundant in the various neceſſaries and luxuries of life, to be found either in the N. or S. of Europe, that the imports would ſeem to be few and inconſiderable. Till the acquiſition of Venice, the chief exports were from the port of Trieſte, conſiſting of quickſilver and other metals, with wines and other native products. The commerce of Venice had ſunk in great decline, but its ſubjection to Auſtria may perhaps infuſe a new ſpirit of exertion: the remaining trade of that city chiefly conſiſted in ſcarlet cloth, and in ſtuffs inwoven in gold and ſilver, ſold to much advantage in the Levant; and the Venetian mirrors retain their ancient reputation; but the city did not exiſt ſo much by immediate commerce, as by the vaſt wealth acquired during a long period of proſperity. Dr. Townſon[12] gives a table of the exports of Hungary for one year, from which it appears that they conſiſted chiefly of cattle, hogs, ſheep, flour, wheat, rye, wool, and wine, carried to other Auſtrian provinces; and only about one ſeventh part ſent to foreign countries.

[12] p. 198. Hoeck ſays, that in the archduchy of Auſtria there are ſeven great manufactures of cotton cloth, which occupy 140,000 individuals; and at Lintz a woollen manufactory employs 30,000. The iron manufactures are numerous in Stiria. Bohemia has linen manufactures to the annual amount of 16,000,000 of florins, with ſome in wool, and cotton. For the others that author may be conſulted.

CHAPTER IV.

Natural Geography.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

Climate and Seasons.

THE climate of Auſtria proper is commonly mild and ſalubrious, though ſometimes expoſed to violent winds, and the ſouthern provinces in general enjoy delightful temperature, if the mountainous parts be excepted, expoſed to the ſeverities of Alpine winter. The more northern regions of Bohemia and Moravia, with the late acquiſitions in Poland, can likewiſe boaſt the maturity of the grape, and of gentle and favourable weather. The numerous lakes and moraſſes of Hungary, and the prodigious plains reſembling deſerts, are ſuppoſed to render the air damp and unwholeſome, the cold of the night rivalling the heat of the day; but the keen blaſts from the Carpathian mountains ſeem in ſome meaſure to remedy theſe evils, the inhabitants being rather remarkable for health and vigour.

Face of the Country.

The appearance of the various regions ſubject to Auſtria is rather mountainous than level, preſenting a ſtriking contraſt in this reſpect to thoſe of Ruſſia and Pruſſia. Commencing at Bregentz on the lake of Conſtance, we find chains of mountains, and the Rhætian alps, and glaciers of Tyrol, branching out on the S. and N. of Carinthia and Carniola. Another chain pervades Dalmatia, and on aſcending towards the N. Stiria diſplays chains of conſiderable elevation. The ſouthern limit of Auſtria proper is marked by other heights; and Bohemia and Moravia are almoſt encircled by various mountains, which on the E. join the vaſt Carpathian chain, which winds along the N. and E. of Hungary and Tranſylvania, divided from each other by another elevated ridge:

ridge: the diſmembered provinces of Poland, though they partake in the S. of the Carpathian heights, muſt yet afford the wideſt plains to be found within the limits of Auſtrian power. Face of the Country.

This ample extent of country is alſo diverſified by many noble rivers, particularly the majeſtic Danube, and its tributary ſtream the Tiefs, which flows through the centre of Hungary; and ſcarcely is there a diſtrict which is not duly irrigated. The general face of the Auſtrian dominions may therefore be pronounced to be highly variegated and intereſting; and the vegetable products of both the N. and S. of Europe unite to pleaſe the eye of the traveller.

Soil and Agriculture.

The ſoil is upon the whole extremely fertile and productive, in ſpite of the neglect of induſtry, which has permitted many parts of Hungary, and of the Poliſh provinces, to paſs into wide foreſts and marſhes. Were ſkill and labour to aſſume the axe and ſpade, theſe very parts might diſplay the greateſt exuberance of fertility. Travellers ſeldom attend to the important topic of national agriculture; and therefore intelligence ſomewhat antiquated muſt be adopted. About the year 1770 Mr. Marſhall[1] found that Bohemia had ſuffered conſiderably by the ravages of war; the wheat was however tolerable, but the barley full of weeds, and expoſed by negligence to the inroads of the cattle, who are fed in winter with the cabbage-turnip, and red cabbage, both cultivated in large quantities. The flax ſeemed particularly to flouriſh; but the induſtry of the citizens, farmers, and peaſants, was cruſhed by the overweening pride of the nobility, and the ſtate of the peaſantry was little ſuperior to that of Poland. In the warm ſpots of Bohemia hops were cultivated, which with the barley formed excellent beer, a chief export of the country. In Moravia the agriculture ſeemed rather ſuperior, being improved by Flemiſh farmers. That of Auſtria was laudable, except that encloſures were wanting. The greater part of Hungary he regarded as a fertile paſturage for ſheep; and Flemiſh manufacturers were employed to improve the wool. Oats were little cultivated in Auſtria proper; the other products as uſual in England, particularly abundance of cabbages and potatoes; but the cultivation was not neat, ſmall waſte ſpots being left by the plough, which harboured

[1] Travels, iii. 304.

weeds,

Soil and Agriculture.

weeds, to the great detriment of the field. The vineyards and fields of saffron were numerous, cattle appeared in abundance; and large herds of swine, the latter feeding all the summer in the woods. At a more recent period, Mr. Coxe[2] gives a deplorable picture of the want of cultivation in the southern provinces of Poland, now subject to Austria, the country being generally overspread with vast tracts of thick gloomy forests, and even from Cracow to Warsaw, a course of about 258 English miles, he only met with two carriages, and about a dozen carts. The country was generally sandy or marshy, and quite devoid of marks of industry: the peasantry were the most miserable and abject that he had ever seen, and would assemble in crowds to implore charity. Such being the case, Austria cannot have made any great acquisition in her Polish provinces; and Prussia has in fact the chief reason to boast of the partition.

Rivers.

Danube.

In enumerating the chief rivers which pervade the Austrian dominions, the Danube commands the first attention. This magnificent stream rises in Swabia; and Count Marsigli has delineated and explained its humble fountains, in his large and curious work on this river. Though the course be occasionally impeded by small falls and whirlpools, yet it is navigable through a prodigious extent, and after watering Swabia, Bavaria, Austria proper, Hungary, and Turkey in Europe, it joins the Euxine, or Black Sea, after a comparative circuit of about 1300 British miles, about one half of its progress being through the territories of Austria.

Tiefs.

Next in consequence is the Tiefs, which arising from the Carpathian mountains, towards Buckovina, and bending towards the west, receives many tributary streams from that alpine chain; and afterwards turning to the S. falls into the Danube not far to the W. of Belgrade, after a course of about 420 miles. At Belgrade the Danube receives the Sau, or Save, which forms a boundary between Austria and Turkey, rising not far from Idria in the mountains of Carniola, and pursuing a course nearly equal in length to that of the Tiefs. That of the Drau or Drave extends to about 350 miles, from its source in the eastern mountains of Tyrol, till it join the Danube below Esseg.

[2] Vol. i. 162, and p. 262.

The

The Inn riſes in the E. of Swiſſerland, from the mountain of Maloggia in the Griſons, being a point of partition dividing the waters which run towards the Black ſea, from thoſe which flow into the Adriatic[3]. This powerful river is more gentle near its ſource, than the other Alpine ſtreams, but ſoon becomes more precipitous; and joins the Danube at Paſſau with a weight of water nearly equal to that ſtream, after a courſe of about 250 miles, being nearly equal to that of the Danube itſelf at their junction. Rivers.

The Raab, and the Leytha, intermediate ſtreams between the Drave and the Inn, only deſerve a brief mention. The Mulda is a conſiderable river which riſes in the ſouthern mountains of Bohemia, and after running about 50 miles S. E. bends due N. and joins the Elbe near Melnick, after paſſing through Prague. The Elbe itſelf ariſes in the Sudetic mountains between Bohemia and Sileſia, and waters a great part of the former kingdom before it enters Saxony, bending its courſe N. W. towards the German ocean. The Morau, whence Moravia derives its name, alſo ariſes in the Sudetic mountains; and paſſing by Olmutz joins the Danube not far to the W. of Preſburg. Mulda. Elbe. Morau.

Of the more ſouthern ſtreams the Adige ſprings from the Rhætian Alps, and being joined by the Eiſac on the E. pervades the S. of Tyrol, and Trent, then flows by Verona towards the Adriatic, which it joins only about ten miles to the N. of the Po. The Tagliamento, Piave, and Brenta, all ſpringing from the Tyroleſe alps, may alſo be now regarded as Auſtrian ſtreams. Adige.

The lakes in the Auſtrian dominions are numerous, and ſome of them of conſiderable ſize. Bohemia preſents a few ſmall pieces of water, towards its ſouthern boundary; but on entering Auſtria proper, the lake of Traun, the Ebernſee, and others, are of greater extent. Carinthia contains a large central lake not far from Clagenfurt; and Carniola another, the Cirknitz See. Tyrol, though an Alpine country, diſplays no lake of any conſequence, except a part of the Lago di Garda; but the glaciers are numerous. Hungary contains many moraſſes, and lakes; the moſt important of the latter being that of Platte, or the Platten See extending about forty-five Britiſh miles in Lakes.

[3] Coxe's Swiſſ. iii. 28.

Lakes. length, by eight in breadth, and abounding with fish. The Neusidler lake, about thirty miles S. E. of Vienna, is about thirteen miles in length by four in breadth. It is almost surrounded by fens; and is chiefly remarkable for being in the vicinity of Eisenstadt, the princely residence of the family of Esterhazy. On the E. of the Tiess is the lake of Palitzer, about eight miles in length. In Transylvania is the Tsege To; and many small lakes are situated amidst the Carpathian mountains.

Mountains. In considering the various elevated chains which diversify the Austrian territories, the description shall begin with the western extremities, and terminate with the eastern. In this point of view the

Rhætian Alps. Rhætian or Tyrolese Alps will claim the first attention. These chiefly proceed in a direction from the S. W. to the N. E., or from the Valteline to the archbishoprick of Salzburg. This Saussure has observed is the general course of the Alpine chains.[4] The Brenner mountains, for such is the modern name of the Rhætian Alps, rival the grand Alps of Swisserland in numerous glaciers; and like other grand chains present exterior barriers, that on the N. being distinguished by the name of Spitz, while that on the S. is termed Vedretta.[5] On leaving Italy there is almost a gradual ascent, from Trent to the highest summit. The primitive or greatest elevations arise to the N. of Sterzing, whence streams proceed towards the river Inn on the N. and the Adige on the S., and the Eisac descends, a precipitous torrent, amidst masses of granite, petrosilex, and marble, while the avalanches become dangerous to travellers. "The naked and rugged peaks of the mounts Lorenzen, Fartschel, and Tschafatsch, raise their towering heads towards the N. W., and on the S. E. are those of Glander, Schlos, Pragls, and Pallanser. Their summits are entirely bare; and seem to be composed of granite." The glacier most easy of success is that of Stuben, the centre of which presents many Alpine plants; and the granite and porphyry are frequently covered with calcareous stone. The glacier of Stuben is 4,692 feet above the level of the sea, and presents the usual phænomena of such scenes, with beautiful pyramids of azure, which in sunshine reflect a blaze of light. The mountain specially called

[4] Vol. viii. 241. [5] Beaumont's Rhæt. Alps, London, 1792 fol. p. 37, &c.

Brenner

Brenner is, according to Beaumont, only 5,109 feet above the ſea. The town of Steinach is placed nearly in the centre of the Tyroleſe chain: towards the E. from the midſt of a long courſe of glaciers running N. E. and S. W. riſes the grand mountain Gefrorn, a maſs of granite covered with eternal ſnow, and one of the higheſt peaks of the Rhætian Alps: on the weſt is Habichſpiz, of ſmaller height; but to the S. W. is Tributaan, another ſtupendous peak of the great Brenner chain. The Bock-kogo is another vaſt peak, riſing little inferior to Gefrorn, and in the ſame latitude, but towards the weſt.[6] Mountains.

Towards the W. and N. of Inſpruck are ſeveral detached mountains, covered with conſtant ſnow; among which thoſe of Verner* are the moſt remarkable. Near the glaciers are found rock cryſtals of various colours, vulgarly called rubies, emeralds, &c. and the inferior ranges of the Tyroleſe mountains contain mines of ſilver, copper, lead, mercury, iron, alum, and ſulphur. In the vale of Zill is a mine of gold, which barely defrays the expence and labour. Towards the S. the mountains are rich in wood and paſturage; but the northern hills are bleak and barren. The inferior mountains are, as uſual, calcareous, or argillaceous; but thoſe of Verner are granitic. The Tyroleſe Alps being ſeldom viſited by travellers, it was judged proper to give rather an ample deſcription.

In the provinces towards the S. and E. of Tyrol, the mountains are not of ſuch conſiderable elevation; yet the northern parts of the territory, formerly Venetian, preſent many conſiderable hills, branching from the Swiſs and Tyroleſe Alps. A minute enumeration would be ſuperfluous; but Mount Baldo, on the eaſt of the lake Garda, muſt not be omitted, having become remarkable among botaniſts by a variety of curious plants. Mount Bolca, fifty miles N. W. of Venice, is noted for foſſil fiſh in argillaceous ſchiſtus. The Euganean hills, near Padua, have been ſuppoſed to be volcanic. But leaving the uncertain poſſeſſions in Italy, the provinces of Carinthia and Carniola preſent many Italian. Carnic.

[6] Beaumont's Rhæt. Alps, 59. The Brenner, or burning hill, is ſo called on account of the frequent thunder ſtorms. Ib. 65. The Glockner and Ortel are computed at 11,500 feet. In the archbiſhopric of Salzburg the Hoch-horn at 10,663. Monthly Mag. ix. 539.

* Buſching, vii 84. ſays *Ferner* is merely a Tyroleſe term for a glacier.

Mountains. conſiderable chains of mountains; as that of Lobel which ſeparates theſe countries; and the Julian, or Carnic Alps, (now called Birnbaumer Wald,) which divide Carinthia from Italy. Carniola is chiefly mountainous, and many of the ſummits are covered with laſting ſnow; the moſt memorable are the Kalenberg near the river Save, and the Runberg, and the Karſt to the S. of Idria. Here alſo terminates the vaſt chain, which proceeds by the N. of Dalmatia towards the Hæmus, and is known by many local appellations, as Mount Promina near Gnin, Mount Prologh, Mount Clobu, &c. &c. but better diſtinguiſhed by the title of the Dalmatian chain. The latter mountains are chiefly calcareous.[7]

Returning towards the N. firſt occurs the chain of Bacher, in the S. of Stiria; mount Graſan on the E. of Judenburg; and the chief mountains in this province, thoſe of Grimin, in its weſtern extremity towards Salzburg. On the E. towards Hungary this country is more plain and fertile.

Auſtrian. On the S. of Auſtria is a chain of inconſiderable elevation. Buſching ſuppoſes that the ancient Cetius is a ridge extending from near the ſource of the river Save, towards the Danube, about nine Britiſh miles on the W. of Vienna, where it is called Leopoldſberg.[8] The general name is the Kalenberg; but parts of it go under particular denominations, as Caumberg, Annaberg, Sauruſſel, Teufelſtaig, Golach, Schneeberg, Semmering, &c. and it is certain that the Cetian chain of Ptolemy runs in that direction.* However this be, Upper Auſtria, or the weſtern part of this province, contains many conſiderable mountains, the higheſt of which is in the maps called Priel, but the proper name is Greſſenberg. Towards the N. Auſtria is divided from Bohemia by a ridge of conſiderable elevation, which paſſes to the N. E. of Bavaria. On the N. W. Bohemia is parted from Saxony by a chain of metallic mountains, called the Erzgeberg, a word that implies hills containing

[7] Fortis's Dalmatia.

[8] vi. 527-8. The ridge of Kalenberg was the weſtern boundary of Germany till about A. D. 1040, when it was removed E. to the river Leitha. Putter, i. 155.

* The Semmering heights divide Auſtria from Stiria; and a noble road was formed over them in 1728. The Lobel, between Carinthia and Carniola, is paſſed by a ſingular excavation through a ſummit. Brown, 125.

mines.

mines. On the W. of the river Eger, near its junction with the Elbe, ſtands the mountainous groupe of Mileſſou ſuppoſed to be the higheſt in the province.* On the N. E. the Sudetic chain, which branches from the Carpathian, divides Bohemia and Moravia from Sileſia and the Pruſſian dominions. MOUNTAINS.

The Carpathian mountains, that grand and extenſive chain which bounds Hungary on the N. and E., have been celebrated from all antiquity. By the Germans they are ſtyled the mountains of Krapak, probably the original name, which was ſoftened by the Roman enunciation: the Hungarians, a modern people, call them Tatra. This enormous ridge extends in a ſemicircular form from the mountain of Javornik S. of Sileſia towards the N. W. But at the mountain of Trojaſka, the moſt northern ſummit, it bends to the S E. to the confines of the Buckovina, where it ſends forth two branches, one to the E. another to the W. of Tranſylvania; which is alſo divided from Walachia by a branch running S. W. and N. E. The whole circuit may be about 500 miles. Dr. Townſon viſited theſe Hungarian Alps from the vicinity of Keſmark, firſt proceeding to the Green See, a lake amidſt the mountains, paſſing through foreſts of firs, which were ſucceeded by rocks of limeſtone and granite. The Krumholz, a kind of tree reſembling the pine, but feathered with thick branches to the very ground, ſomewhat impeded the progreſs. He computes that the Keſmark peak, which towards Hungary is a perpendicular rock, may be about 8508 feet above the level of the ſea. He afterwards proceeded to the Lomnitz peak, which he ſays is the higheſt of the whole Carpathian chain, and placed towards its centre: yet he afterwards expreſſes ſome doubt whether it be not rivalled, if not exceeded, by the Krivan, ſituated more towards the W. 20° 45′ of E. longitude from London.† The ſummit of Lomnitz he attained with ſome difficulty, and computed it to be 8640 feet above the level of the ſea, not much above half the height of M. Blanc, or M. Roſa. He found it compoſed of grey granite like the rocks at the bottom; but with a ſmall Carpathian Mountains.

* Buſching, vi. 126. The Donnerberg, near Mileſſou, is regarded as the higheſt mountain in Bohemia. The ſummit of the Rieſengeberg is free from ſnow in ſummer, and probably not above 6000 feet high. See Rieſbeck, ii. 149.

† 358. 363.

mixture

Mountains. mixture of a greeniſh black, earthy ſubſtance; yet the vegetation conſiſted of little except a few lichens. Thoſe peaks are ſeldom viſited except by the hunters of the chamois, and ſome idle adventurers, who ſearch for gold and precious ſtones. The marmot alſo appeared; but our intelligent author denies that the ibex, or rock goat of the Swiſs Alps, is found in the Carpathian heights. The Krivan he afterwards aſcended with more eaſe, but found it inferior in height to the Lomnitz, being 8343 feet above the ſea. It is probable that ſummits of greater elevation ariſe in the eaſtern part of the chain; but there are no glaciers nor other tokens of the eternal winter of great altitude.

The Carpathian ridge occaſionally branches towards the N. and S.; in the former direction the moſt remarkable are the hills on the W. of Sileſia, thoſe which adjoin to the ſalt mines of Wieliczka a few miles S. E. from Cracow in Poland, and thoſe which extend through part of the Buckovina. Towards the S. a branch ſtretches from the centre of the chain towards Tokay; and there are other branches not accurately defined, which deſcend in the ſame direction from the eaſtern circuit. Among the detached mountains of Hungary may be named thoſe of Matra in the centre of the kingdom, about 50 miles N. E. of Buda: thoſe of Fatra N. E. of Cremnitz: of Avas in the diſtrict of Marmaruſs: Farkas to the S. of Nemethi. The mountains of Tranſylvania are numerous, beſides the two branches of the Carpathian chain, which may be regarded as encloſing the country. The Bannat of Temeſwar alſo preſents many ridges of conſiderable height.

Foreſts. To enumerate the foreſts in the Auſtrian dominions would be a taſk at once laborious and fruitleſs. Suffice it to obſerve that numerous and extenſive foreſts ariſe in every direction, particularly along the Carpathian mountains, and in the provinces acquired from Poland. Even Bohemia was formerly remarkable for a foreſt of great extent, a remain of the Hercynia Sylva of antiquity, which extended from the Rhine to Sarmatia, from Cologne to Poland. The Gabreta Sylva was on the S. W. of the ſame country, where a chain of hills now divides it from Bavaria.

The

Botany.

The ſtates which compoſe the powerful and extenſive empire of Auſtria have been ſurveyed with very different degrees of accuracy as to their natural productions. While the botany of Auſtria proper has been carefully illuſtrated by Jacquin; and that of Carniola by Scopoli and Hacquet; the flora of Hungary is ſtill very imperfect; and the late acquiſitions in Poland by the laſt and former partitions are as yet in a manner unknown to natural hiſtory. The general mild temperature of the Auſtrian ſtates, their variety of ſoil and ſituation, from the lakes and rich levels of Hungary, to the ſnowy ſummits of Iſtria and Carinthia, are a ſufficient evidence of the richneſs of their flora; each year it is augmented by the diſcovery of new ſpecies, and will doubtleſs long continue to be increaſed by the inveſtigations of future botaniſts. We ſhall follow the plan to which we have hitherto adhered of enumerating, as far as our narrow limits will allow, the principal vegetables, natives of Auſtria, which for their beauty or uſe merit particular notice; of theſe it will be found that a large proportion have been admitted into our gardens, and many more, from the elegance of their form, or glow of colour, have an equal claim to domeſtication.

Of the natural order of the *Enſatæ*, diſtinguiſhed by their compreſſed ſharp ſword-ſhaped leaves, ſeveral ſpecies are found wild in the Auſtrian dominions, among which may be diſtinguiſhed five ſpecies of iris, the pumila, graminea, ſibirica, ſpuria, and variegata; the gladiolus communis, *corn-flag*; and anthericum ramoſum, *branched ſpiderwort*; all of which have been naturalized in our gardens.

The bulbous-rooted plants of the order Hexandria of Linnæus, remarkable, for the moſt part, for the beauty of their flowers, and abounding moſt in the warmer climates, occupy a conſpicuous rank in the flora of Auſtria: a long liſt of theſe might be produced, but we ſhall ſelect only the principal: theſe are hyacinthus comoſus, and ramoſus, the *tufted* and *cluſtered hyacinth*; ſcilla bifolia; leucojum vernum, æſtivum, and autumnale, the *ſpring*, *ſummer*, and *autumn ſnowflake*; allium victoriale, one of the moſt ſtately and ornamental ſpecies of the large genus *garlic*; lilium bulbiferum, *orange lily*; l. martagon, *martagon lily*; l. chalcedonium, *turncap lily*; galanthus nivalis, *ſnow-drop*; ornithogalum umbellatum, *umbellated ſtar of Bethlehem*; erythronium

Botany. dens canis, *dog's tooth violet*, one of the earlieſt beauties of the ſpring; fritillaria meleagris, *chequered daffodil*; crocus vernus, *ſpring crocus*; aſphodelus ramoſus, *branched aſphodel*; hemerocallis flava, and fulva, *yellow* and *tawny day-lily*; and laſtly, though perhaps ſuperior in beauty to any of the preceding, veratrum album and nigrum, *white* and *black hellebore*.

For the claſs ſyngeneſia, or the compound flowered, though it contain many ſpecies that are natives of Auſtria, yet as theſe are for the moſt part plants of little uſe, and as little remarkable for their beauty, a ſhort notice will ſuffice: the moſt intereſting of theſe to the general reader are arnica montana, uſed in medicine; prenanthes viminea; carduus mollis and canus, *ſoft* and *hoary thiſtle*; tragopogon major, *greater goats-beard*; ſcorzonera purpurea, *purple ſcorzonera*; achillea clavennæ; ſenecio abrotanifolius, *ſouthernwood-leaved ragwort*, with ſomewhat hoary finely divided leaves and large bright yellow bloſſoms; gnaphalium leontopodium, *lion's-foot cudweed*; after alpinus, *mountain daiſy*; artemiſia Auſtriaca, *Auſtrian ſouthernwood*; and xeranthemum annuum, a pretty plant, an inmate of our gardens whoſe radiated purple and white flowers, if gathered when fully blown and kept in a dry place, will retain their beauty the whole winter through.

Of the ſedums and their kindred genera it will be ſufficient to mention two ſpecies of ſingular beauty, the ſempervivum hirtum, *hairy orpine*; and ſ. moritanum; of theſe the latter is by far the moſt elegant plant of its tribe.

To the claſs decandria belong ſeveral intereſting plants, of which the following are moſt worthy of mention; dianthus alpinus and virgineus, *alpine* and *maiden pink*; dictamnus albus, *fraxinella*; ſaxifraga cæſia; and three ſpecies of rhododendron, the hirſutum, chamæciſtus and ferrugineum, all of which merit diſtinction in a genus, every ſpecies of which is more than commonly beautiful.

The umbelliferous plants of Auſtria, as well as thoſe of every other European country, are very numerous; the following are the larger ſpecies and the moſt characteriſtic, Selinum carvifolium; S. Auſtriacum; Heracleum Auſtriacum; Peucedanum Alſaticum; Liguſticum Auſtriacum; and L. Peloponneſiacum.

The

The Linnæan claſs pentandria contains the moſt beautiful of the indigenous plants of the Auſtrian dominions, ſeveral of which have found their way into our gardens. The moiſt and ſpungy ſides of the mountains from the Carpathian chain to the heights of Iſtria are adorned by the ſoldanella alpina and aretia alpina, two minute but exquiſitely beautiful plants, the former with purple, the latter with white and fleſh-coloured bloſſoms. Among the numerous ſpecies of flax, the following very elegant ones are natives of Auſtria: Linum hirſutum, *hairy flax*; L. flavum, *yellow flowered f.*; L. alpinum, *mountain f.*; L. Auſtriacum, *Auſtrian f.*, with large deep-blue bloſſoms; L. perenne, *perennial f.* The reſt of this claſs that require notice are, cerinthe major, *greater honeywort*; verbaſcum phœniceum, *purple mullein*; gentiana acaulis, *ſtemleſs gentian*, diſtinguiſhed by its large erect blue bell-ſhaped bloſſom, riſing immediately from the centre of the leaves; gentiana Pannonica, the moſt ſplendid of the whole genus, growing to a conſiderable height, and bearing its large purple-dotted bloſſoms in tufts on the top and ſides of the ſtem: gentiana aſclepiadea; and g. punctata: the Auſtrian flora is alſo graced by ſeveral ſpecies of primula, as p. auricula; p. integrifolia; p. carniolica, p. glutinoſa; by the cyclamen europæum; androſace villoſa and lactea; campanula thyrſoidea, remarkable for its pale yellow bloſſoms; phyſalis alkekengi, *winter cherry*; and aſclepias vincetoxicum, *ſwallow-wort*.

Of the papilionaceous plants may be enumerated cytiſus laburnum, the *greater laburnum*, a tree of ſome magnitude, adorning the banks of the Danube with its long cluſters of golden bloſſoms; cytiſus ſupinus, Auſtriacus, and hirſutus; orobus pannonicus; coronilla emerus, an elegant ſhrub; coronilla ſecuridaca; and coronilla coronata, diſtinguiſhed by its glaucous leaves, and its bright yellow bloſſoms; aſtragalus montanus and piloſus; and fumaria bulboſa, *bulbous-rooted fumitory*.

Of the cruciform or tetradynamious plants it will be ſufficient to mention cardamine trifolia; alyſſum montanum, *mountain alyſſon*; draba aizoides and Pyrenaïca, the three laſt of which are found in our gardens.

Botany. Several remarkable plants, inhabitants of the Auſtrian dominions, arrange themſelves under the Linnæan claſs polyandria; among theſe may be diſtinguiſhed two ſpecies of Adonis or *pheaſant's eye*, the a. miniata and flammea, adorning the fallows with their ſcarlet petals; papaver alpinus, *alpine poppy*, remarkable by its ſnow-white flowers; anemone alpina and narciſſifolia, *mountain* and *narciſſus-leaved anemone*; helleborus viridis, *bears-foot hellebore*; H. niger, *Chriſtmas roſe*; and H. hyemalis, *winter aconite*; ranunculus alpeſtris, *white-flowered mountain ranunculus*; and R. illyricus, a moſt elegant plant with yellow bloſſoms, and glaucous hairy leaves: potentilla cauleſcens; P. Cluſiana, a handſome plant with white flowers; and P. nitida, conſpicuous for its beautiful fleſh-coloured petals, and its glaucous leaves: atragene alpina, adopted into our flower-gardens; roſa alpina, *ſmall alpine roſe*; clematis integrifolia, *entire-leaved virgin's bower*; and four ſpecies of aconite or monkſhood, A. napellus, A. lycoctonum, A. anthora, and A. cammarum, the largeſt and moſt ſhowy of the whole genus; nymphæa lotos, the ſacred *lotus* of Egypt and India, has alſo of late been found in ſome lakes in Hungary.

The galeated or didynamious plants of Auſtria are not very numerous; of theſe the following are the chief, digitalis ambigua; antirrhinum alpinum; ſalvia Auſtriaca, ſylveſtris, and æthiopis; pedicularis roſtrata and verticillata; and the *roſemary*, roſmarinus officinalis.

The perennial ſhrubby plants may be divided into the flowering ſhrubs, the fruit-bearing, and the foreſt trees. Of the former claſs ſome, as the laburnum, have been already mentioned, the reſt with the exception of erica carnea, *fleſh-coloured heath*; ſyringa vulgaris, *lilac*; and tamarix Germanica, *German tamariſk*, are ſcarcely intereſting except to baniſts. The common fruit-trees of Europe are largely cultivated in the provinces of Auſtria, but their liſt of native fruits is very ſcanty, the following are the chief; ribes alpinum, *mountain currant*; pyrus nivalis; pyrus cydonia, *quince*; ſorbus domeſtica, the *ſervice*; meſpilus cotoneaſter, *medlar*; prunus ceraſus, *black cherry*; p. avium, *bird-cherry*. The foreſt trees are loranthus europæus; ulmus campeſtris, the *elm*; ulmus diffuſus, the *wych elm*; tilia europæa, *lime tree*; betula

betula alba and alnus, *birch* and *alder*; quercus robur, and cerris, *common* and *prickly-cupped oak*; rhus cotinus, *ſumach*; juglans regia, *walnut*; fagus caſtanea and ſylvatica, *cheſtnut* and *beech*; carpinus betulus, *hornbeam*; carpinus oſtrya; populus alba, nigra, and tremula, *black* and *white poplar* and *aſpen*; acer pſeudo-platanus and campeſtris, *ſycamore* and *maple*; fraxinus excelſior, *aſh*; pinus ſylveſtris, abies, picea, and larix, the *pine*, the *fir*, the *yew-leaved fir*, and the *larch*. Botany.

The domeſtic animals in the Auſtrian dominions are commonly excellent, particularly the cattle. According to a late traveller[10] the Hungarian horſes have been erroneouſly eſtimated from the ſpirited cavalry ſupplied by other regions, while the native breed is very ſmall, and the ſtallions and brood mares are foreign. Many of the native horſes run wild, and are ſold in great numbers at the fairs, before they have ſuffered any ſubjection. The breed of cattle is moſtly of a ſingular colour, a ſlaty blue; and the Hungarian ſheep reſemble the Walachian in their long erect ſpiral horns, and pendent hairy fleece. In the weſtern parts of the Auſtrian ſovereignty, the animals do not ſeem to be diſtinguiſhed from thoſe of other parts of Germany. Zoology.

The large breed of wild cattle, called Urus or Biſon, is ſaid to be found in the Carpathian foreſts, as well as in thoſe of Lithuania and Caucaſus. Among the ferocious or wild quadrupeds, may alſo be named the bear, the boar, the wolf, the chamois, the marmot, and the beaver. Among the larger birds, the buſtard and pelican are ſome of the moſt uncommon; and Carniola produces the ſtrix ſylveſtris, the tetrao nemeſianus, the ſturnus collaris, the emberiza barbata and brumalis, the motacilla of three uncommon kinds, the hirundo rupeſtris, the ardea alba, the mergus æthiops, three kinds of the larus, and the anas ſubterranea."[11] Even Auſtria claims ſome birds rather peculiar, as four uncommon kinds of the falcon, the ſtrix ſabaurita, the motacilla dumetorum, the parus pendulinus, the pratincola krameria, and perhaps others. The Danube alſo boaſts of ſome fiſhes ſeldom found in other rivers, among which is a ſmall and delicate ſort of ſalmon. To enumerate uncommon inſects would be too minute a labour for the deſign of the preſent work; but for thoſe of Hungary the travels of Dr. Townſon may be conſulted.

[10] Townſon, 230.

[11] Pennant, Brit. Zool. ii. Appen.

MINERALOGY. The mineralogy of the Auſtrian dominions being by far the moſt various and intereſting of any in Europe, it will be proper to conſider it with ſome attention. There is ſcarcely a province of this extenſive territory, from the frontiers of Swiſſerland to thoſe of Turkey, which cannot boaſt of advantages in the mineral kingdom; and as it were by a deſtiny attached to the houſe of Auſtria, even the acquiſitions in Poland contain one of the moſt remarkable mines in Europe, the ſaline excavations of Wielitſka. To begin on the N. W. and afterwards purſue the deſcription towards the S. and E., the mines of Bohemia have been celebrated from ancient times.[12] Silver is found at Kuttenberg, and at Joachinſthal, on the weſtern frontier towards Saxony, probably a continuation of the veins of that country: this mine was diſcovered in 1516, and next year were ſtruck from it the crowns of Joachim. Other places of this province alſo produce this precious metal: and gold has been diſcovered at Keonſtock. One of the moſt ſingular products of this province is tin, which is found at Zinwald (that is the tin foreſt), alſo on the frontier of Saxony, near Krauppen, at Schlackenwald or Slauka, a few miles to the N. of Carlſbad, and at Lauterbach and Schoenfeld in the ſame diſtrict; ſo that this metal is reſtricted to the weſtern part of Bohemia: where is alſo found, at Dreyhacken, a mine of very pure copper. Lead occurs at Bleyſtadt, or Pleyſtadt, in the ſame quarter; and Buſching reckons quickſilver among the products of Bohemia, along with iron, magnet, alum, ſulphur, vitriol, terra ſigillata, talc, and coal. But the precious ſtones which he mentions ſeem to be only coloured cryſtals. The garnets of Bohemia are however among the moſt beautiful of the kind. They are chiefly found in clay, mingled with mica, at Meronitz in the mountain of Stiefelberg, whence they are carried to Bilen.[13] There are other mines of garnets in the ſame region, on the weſt of the highway leading from Prague to Dreſden, where they are found with balls of baſalt formed of concentric layers, and ſome jacinths and chryſolites. The women waſh the clay in which the garnets are found; after which they are ſifted and arranged according to ſize; and ſold by the pound weight from about three to ten ſhillings. Many workmen are occupied in cutting and

[12] Buſching, vol. vi. 126. French edit. 8vo.

[13] Journ. des Min. No. iv. 36.

piercing

piercing them, for necklaces, and other ornaments: they are poliſhed in facettes, with emery on a piece of freeſtone, and pierced with a ſmall diamond. This branch of commerce is of great antiquity at Carlſbad, and at Walkirk in Suabia, where twenty-eight mills are occupied in this article only. MINERALOGY.

Nor is Moravia deſtitute of mineralogic advantages, producing not only iron in great abundance, but alum, ſulphur, and ſaltpetre. Gold was formerly found in the diſtrict of Znoyn or Znain: and ſilver was lately worked in that of Iglau, both on the confines of Auſtria.[14]

The fertile archduchy of Auſtria diſplays few minerals, though there be mines of gold near the abbey Goettwig, and of alum near Krems: ſaltpetre is however prepared in abundance; and at a little diſtance from St. Annaberg, near the frontiers of Stiria, a rich mine of ſilver was opened in 1754. The ſouthern provinces of Stiria, Carinthia, and Carniola, afford many important minerals. The iron of Stiria ſupplies the fineſt ſteel, and great quantities are imported into England: it is chiefly found at Eiſenerſt and Vorderberg; the former, in the diſtrict of Enſthal, ſo called from the river Ens, were diſcovered in the year 1712; and the others are in the ſame quarter.[15] There are conſiderable lead mines near Pegau on the river Mohr, yielding about 5000 tons yearly; and at Zeyring were ſilver mines under water ſince the year 1158. Stiria alſo affords coal at different places; not to mention minerals of mere beauty or curioſity, among which may perhaps be named the ſingular blue granite, which according to ſome is found at Kruglah, or Krigloch, about twenty miles to the E. of Bruck: but others ſay near Villach, in Carinthia. Mr. Kirwan[16] obſerves that the feiſite, or blue felſpar, which conſtitutes this granite, was lately diſcovered near Krieglach in Stiria by Mr. Widenman; though in another place[17] he call it the blue granite of Carinthia. This beautiful mineral may however be the production of both countries.

On the E. of Stiria extends the duchy of Carinthia, alſo yielding excellent iron, the mines of Frieſach on the N. being particularly famous, as well as thoſe near the ſources of the Lyſer. In the neighbourhood

[14] Buſching, vi. 420.
[15] Ferber's Italy, p. 5.
[16] Mineral. i. 326.
[17] P. 339.

of

Mineralogy. of Villach, at Bleyberg, are found rich lead mines; and the ſame place ſupplies what is called fire-marble or lumachelli.

Carniola, or Krain, abounds with immenſe caves, and other natural curioſities: but except a few iron works, the mineralogy is little remarkable. On the weſt, towards the county of Gorz, which produces excellent wines, lies the Ban of Idria, a diſtrict immediately ſubject to the chamber of inner Auſtria at Gratz. The quickſilver mines of Idria are celebrated in natural hiſtory, poetry, and romance. They were diſcovered in the year 1499; and the hill of Vogelberg has annually yielded more than 300,000 pound weight of mercury. The common ore is cinnabar; but ſometimes the pure quickſilver runs through the crevices. Idria is ſurrounded with woody hills; and the Vogelberg on the E. produces oaks and broom, while the interior conſiſts of red clay, calcareous rock, and a black ſoft ſlate, which covers the metallic vein in a ſouthern direction. The deep deſcent is by ladders, and ſtairs of ſtone; and the length of the galleries is computed at 316 paces, or 1580 feet.[18] The operations in theſe vaſt mercurial caverns being pernicious to the health, are ſometimetimes allotted as a puniſhment to criminals.

The northern parts of Italy, now ſubject to Auſtria, have never been remarkable in mineralogy: but on paſſing into Tyrol ſeveral mines occur of ancient reputation, ſuch as that of ſilver and lead near Lermos; and in the ſame quarter thoſe of Naſereit in the Verner mountains, about 30 miles N. W. of Inſpruck, which are opulent in ſilver, copper, lead, and iron.[19] Nor is the ſouthern region of Trent wholly deſtitute of mines. It may be proper to remark that ſome curious productions have been aſcribed to Tyrol, which really belong to the archbiſhoprick of Salzburgh, Zillerthal, in particular, being in the latter province.

But the principal mines in the Auſtrian dominions are ſituated in the eaſtern provinces of Hungary and Tranſylvania. About 40 miles to the S. of the Carpathian hills are the gold mines of Cremnitz; and 20 Engliſh miles further to the S. the ſilver mines of Shemnitz; cities which have ariſen ſolely from theſe labours, and thence called mining

[18] Scopoli Tentamen de Minera Hydrargyri. Journal des Mines, No. xxxvi. Sargent's Mine, &c.
[19] Beaumont, 77. Ferber, 329.

towns.

towns. Shemnitz is eſteemed the principal; and the ores are found in what ba[illegible]le Born ſtyles metallic rock.* The academy here inſtituted for the ſtudy of mineralogy is highly reſpectable, and only rivalled by that of Freyberg in Saxony. The mines of Cremnitz alſo produce ſome ſilver. Hungary contains mines of copper at Schmelnitz and Herrengrund, of antimony very rich at Roſenau; and in different parts of coal, ſalt, and alum. Saltpetre is alſo produced in conſiderable quantities: and natron or ſoda is found in a lake near Kiſmaria, towards the frontier of Tranſylvania.[20] Such lakes are commonly white from the ſoda floating on the ſurface. But a mineral peculiar to Hungary, and as yet diſcovered in no other region of the globe, is the opal, a gem preferred to all others by the oriental nations. The opal mines are ſituated at Czerweniza, a ſhort day's journey to the N. of Kaſchaw, and nearly under the ſame latitude with Cremnitz. The hill in which they are found conſiſts of decompoſed porphyry; and they only occur at the diſtance of a few fathoms from the ſurface, of various qualities, from the opake white, or ſemi-opal, which is alſo diſcovered in Cornwall, to that utmoſt effulgence of irideſcent colours which diſtinguiſhes this noble gem. Mineralogy.

The mines of Tranſylvania and the Bannat are alſo numerous and valuable. Thoſe of Najiag, twelve Britiſh miles to the N. E. of Deva, were pretended to be diſcovered by a peaſant, who ſaid that he had obſerved a light ſhining in the evening over the ſpot. They produce the grey gold ore, being that precious metal mingled with antimony, arſenic, lead, and iron, and ſometimes with manganeſe and zinc.[21] They are the richeſt in all Tranſylvania, and conducted with the greateſt care and exactneſs. At Oſenbanya, about 25 Britiſh miles to the

* The Saxum metalliferum is, according to the account of Lefevre, who viſited theſe mines in 1788, (Journ. des Min. No. xii. p. 39 - 50) a porphyry, of white feldſpar and black mica in a red coloured jaſper, too ſoft to be poliſhed. Mr. Eſmark, a diſciple of Werner, who viſited them in 1796 (Ib. No. xlvii), ſays the baſis is feldſpar paſſing to hard clay, containing cryſtals of hornblende, black mica, and ſome times of quartz. Mr. Kirwan deſcribes it as dark green, rarely reddiſh; but Dr. Townſon's account indicates grey with white ſpots, and he ſays that Baron de Born might have recognized it in that yellowiſh grey ſubſtance the uſual adjunct of opal.

Rieſbeck aſſerts that theſe mines would be far more productive if they were farmed out by the crown.

[20] Journ. des Min. No. ii. [21] J. des Min. No. xlvii. Eſmark.

Mineralogy. N. of Karlſburg is found the white gold ore, which alſo occurs in the hills of Fatzebay, in the ſame quarter. The country towards the W. of Karlſburg preſents numerous gold mines near Zalathna: and in the N. of this province are thoſe of Kapnick, Rodna, Felfobanya, and others. Mr. Eſmark alſo mentions thoſe of Veroſpatak, Kirnik, and Boitza, but ſome are exhauſted. At Ohlapian, not far from Zalathna, is found the fineſt gold in Tranſylvania, mingled with gravel and ſand. The chief mining town of the Bannat is Orawiza, on the W. of a chain of mountains, conſiſting of micaceous ſchiſtus, granite, and metallic rock; between which and Buda are chiefly plains of ſand. Towards the S. of Orawiza are found mines of copper: and gold and ſilver at Dognaſka to the N.

The ſalt mines acquired from Poland alone remain to be deſcribed. They are ſituated, as already mentioned, at Wielitſka, eight miles to the S. of Cracow, being excavated at the northern extremity of a branch of the Carpathian mountains. The deſcent is by pits of great depth; and the galleries and chambers are of immenſe ſize, commonly ſupported by timber, or by vaſt pillars of ſalt, out of which material even ſubterraneous chapels are formed; but travellers have idly exaggerated the ſplendour and extent of the ſaline apartments.[22] The miners work by intervals of eight hours; after which they are drawn up, and their places ſupplied by others. The revenue ariſing from theſe mines was computed at near 100,000l. ſterling yearly: but it has conſiderably declined ſince they became ſubject to Auſtria. The ſalt is of an iron grey colour, ſometimes intermingled with white cubes; and ſometimes large blocks of ſalt appear imbedded in marl.[23] The pureſt ſort is found at the bottom of the mine, and is ſparry. The mines extend about 3600 feet from E. to W., and about 200 from S. to N. The ſalt is of the ſame identic kind with that found in Marmarus, on the other ſide of the Carpathian chain, or indeed throughout Tranſylvania, which contains a great number of ſalt mines, though not of conſiderable extent.

Mineral Waters. The mineral waters in the Auſtrian dominions are very numerous, as is to be expected in a country ſo mountainous, with the exception

[22] Coxe's Pol. i. 200. [23] Townſon, 388

of the great plain in the W. of Hungary, extending upwards of 250 miles in every direction. To inſtance a few; Tyrol preſents thoſe of Sellrain, Meran, Sexten, Prax, Agums, Brutz in the upper valley of the Inn, Traſp, Rabi, Pei, and others. In Stiria there are ſeveral; nor are Carinthia and Carniola deſtitute of this advantage. Auſtria proper preſents thoſe of Baden; and Bohemia thoſe at Carlſbad, Toeplitz, Agra, and Deſny. Mineral ſprings abound in Hungary, as at Gran, Buda, Groſwardin, where the hot baths are frequented by the neighbouring Walachians. In the N. are thoſe of Rank, Bertfeld, and others. Mineral Waters.

Among the natural curioſities may be named the grand Alpine ſcenes of Tyrol, the glaciers and peaks of the Brenner. At Gannowitz in Stiria is a fountain whoſe waters are ſaid to be warm in winter and cold in ſummer: a common error, the deception conſiſting in their preſerving the ſame temperature. The calcareous hills of Carinthia afford many ſingular ſcenes; which are however exceeded by thoſe of the Carnian Alps, or Birnbaumer mountains, of Carniola. In the latter country, near Adlſberg, is ſaid to be a grotto of prodigious extent, diſplaying ſpaces ſufficient for the erection of villages, and containing natural amphitheatres, bridges, &c.[24] Near the entrance the river Poig, which riſes at about a mile diſtant, throws itſelf into the hollow of the rock, and paſſes under the grotto, which was perhaps the ancient courſe of the river. The grotto of St. Mary Magdalen, in the ſame diſtrict, is remarkable for beautiful pillars; and that of Lueg for extent and the variety of ſtalactitic figures. Nor is that near St. Serf unworthy of notice. But the chief natural curioſity of Carniola is the lake of Cirknitz, called by Dr. Brown the Zirchnitzer See. That traveller informs us that it is about two German, or more than eight Engliſh miles in length, by four of the latter in breadth. In the month of June the water deſcends under ground, through many apertures at the bottom; and in September it reaſcends with conſiderable force; thus yielding rich paſturage in ſummer, while in winter it abounds with fiſh. The calcareous hills and iſlands of Dalmatia contain ſimilar curioſities; as the lake Jeſero in the iſle of Cherſo, which Natural Curioſities.

[24] Buſching, vii. 60.

Natural Curiosities.

only diffuſes its waters every fifth year;[25] ſeveral curious caverns; and prodigious quantities of foſſil bones, of horſes, oxen, ſheep, &c. but doubtful if any be human; nor have any decidedly ſuch been diſcovered in any region of the globe. Auſtria, Bohemia,* and Moravia, diſplay few natural curioſities; but thoſe of Hungary are numerous, beſides the Alpine ſcenes of the Carpathian mountains. There is a cavern of prodigious extent near Szadello, about thirty Britiſh miles N. W. of Kaſhau.[26] It is, like all the other large caverns, in a hill of limeſtone; and is ſo crowded with large pendent ſtalactites as to become a dangerous labyrinth. Near Szalitze, in the ſame quarter, is another renowned cavern, which, like that mentioned in the account of France, contains a ſmall glacier. At Demanovo, about ſixteen Britiſh miles to the E. of Roſenberg, is another remarkable cave, containing many bones of wild animals which have taken ſhelter there, as not unuſual in the caves of Germany.

[25] Fortis, 429.

* Near Trautenau is a moſt ſingular aſſemblage of natural towers of ſtone, from 60 to 150 feet in height. This ſtony foreſt is of great extent, and is by ſome ſuppoſed to be the ſkeleton of a hill. Rieſbeck, ii. 148.

[26] Townſon, 313.

PRUSSIA.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

THIS kingdom, which only commenced with the eighteenth century, has by gradual acceſſions become ſo extenſive, as deſervedly to rank among the firſt powers of Europe. The dominions of Pruſſia were ſmall and ſcattered, till the acquiſition of Sileſia, and afterwards of a third part of Poland, gave a wide and ſtable baſis to the new monarchy.

This region was faintly known to the ancients, who mention various tribes that poſſeſſed it: and the amber, which here only was found in ſuch quantities as to form a regular article of commerce, greatly contributed to its celebrity. But antiquarian diſquiſitions are foreign to the preſent purpoſe; and it will be ſufficient to obſerve that the name of the country originates, according to ſome, from the Pruzzi a Slavonic tribe; but more probably, according to others from the name of *Ruſſia*, and the Slavonic word *Po*, which ſignifies near, or adjacent. Thus the Polabæ were confeſſedly ſo called, becauſe they were ſituated upon the Elbe, which is called Labe in the Slavonic dialect. Helmoldus,[1] who wrote in the twelfth century, and is the moſt ancient Names.

[1] Lib. i. cap. iv.

Names. chronicler of theſe regions, mentions the Pruzzi, or Pruſſians, among the chief Slavonic tribes: nor is the name unknown to Adam of Bremen, a writer of the preceding century.

Extent. Excluſive of ſmall detached territories, the kingdom of Pruſſia now extends from Hornburg and the river Oker in the country of Halberſtadt, the furtheſt weſtern connected diſtrict, to the river Memel, or about 600 miles. The breadth, from the ſouthern limit of Sileſia to Dantzick, exceeds 300 miles. On the eaſt and ſouth, Pruſſia now borders on the dominions of Ruſſia and Auſtria, and the weſtern limits adjoin to the biſhopric of Hildeſheim if ambition have not extended them ſtill further. Before the recent acquiſitions in Poland the number of Pruſſian ſubjects was only computed at 5,621,500, in a total extent of 56,414 ſquare miles, that is about 99 to the ſquare mile. At preſent they probably amount to about eight millions: including the margraviate of Anſpach and Bayreuth, computed at 400,000; and the laſt acquiſitions in Poland eſtimated at 2,100,000 inhabitants.[2]

Original Population. The original population of Pruſſia appears, from Tacitus and Pliny, to have conſiſted of the Peucini and Æſtii, gothic tribes bordering on the Venedi who were Slavons. The amber of the Æſtii, who ſeem to have been merely a tribe of the Peucini, continued to be celebrated in the time of Theodoric; but at what preciſe period theſe original inhabitants were expelled, or ſubdued, by the Slavonic tribes on the eaſt, remains uncertain. Suffice it in general to obſerve that the Slavonic tribes extended widely over the N. of Germany, after the old gothic inhabitants had crowded to the more fertile regions of the ſouth, in conſequence of the decline and fall of the Roman empire. But the reaction of the knights of the Teutonic order, in the twelfth and following centuries, deſtroyed great numbers of the Slavons, and in ſome meaſure reſtored the original gothic population. Yet one half of the Pruſſian population muſt ſtill be conſidered as Slavonic; as to the former Pomeranians muſt now be added a numerous acceſſion of Poles. In general the Slavons are far more enſlaved by their chiefs than any of the gothic nations; and it is believed that the Poliſh people, how-

[2] Gaſpari Allgem. Jahrbuch, 1800. Weimar.

ever

ever they may execrate the iron rod of Ruſſia, will have no cauſe to regret that they have paſſed under the Auſtrian and Pruſſian ſceptres. Original Population.

The progreſſive geography of thoſe provinces which now conſtitute the Pruſſian territory would form an embroiled and multifarious topic. Ptolemy's eighth map of Europe preſents a very confuſed idea, and imperfect information. The voyage of Ohter, in the reign of Alfred, affords a faint dawn of modern knowledge; which is increaſed by the deſcriptions of Adam of Bremen, and Helmoldus. One of the moſt ſingular features in the geography of theſe regions, during the middle ages, is the exiſtence of Julin, a city of great extent and commerce, on the right bank of the Oder in Pomerania, which was deſtroyed by Waldemar I king of Denmark, ſo that even the name hardly now exiſts in a place called Wollin. Further to the eaſt the Slavonic tribes on the Baltic continued Pagans to a late period; and the country was little known, or viſited, except by a ſpecies of cruſaders, who went to aſſiſt the Teutonic knights in ſubduing thoſe Saracens, as they were ſtyled in the ignorance of the times. Progreſſive Geography.

As this kingdom is recent, and compoſed of ſeveral ancient ſtates, its hiſtorical epochs, and antiquities are of courſe complex. Not to mention the ſmaller provinces, among which is the diſtant principality of Neufchatel, on the frontiers of France, and Swiſſerland, Pruſſia may be regarded as conſiſting of four great diviſions, the electorate of Brandenburg; the kingdom of Pruſſia proper; the large province of Sileſia; and a third part of the ancient kingdom of Poland. As the family which now rules thoſe extenſive domains was originally the electoral houſe of Brandenburg, it will be proper firſt to trace the progreſs of its power. Hiſtorical Epochs.

1. The German genealogiſts derive the houſe of Brandenburg from Thaſſilo count of Hohenzollern, who lived about the ninth century. Sigefred, a Saxon count, having married the daughter of Henry king of Italy, was appointed Margrave of Brandenburg A. D. 927; but many centuries elapſed before this dignity fell to the anceſtor of the preſent family. The province had been for ſome centuries chiefly poſſeſſed by Slavonic nations, but the Margrave ſoon raiſed it to conſiderable

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diſtinction. The ſucceſſion of theſe potentates, of various families, and their petty wars would little intereſt the reader.

2. The emperor Charles IV, in 1373, aſſigned Brandenburg to his ſecond ſon Sigiſmund, who in 1415, being then emperor of Germany, ſold this Margravate and Electorate to Frederic burgrave of Nuremburg, for 400,000 ducats. Frederic, the anceſtor of the preſent reigning race, diſplayed conſiderable abilities.

3. Joachim II, elector of Brandenburg, embraced the Lutheran religion in 1539, which has ſince been the ruling ſyſtem of the ſtate.

4. John Sigiſmond becomes duke of Pruſſia in 1618. This ſucceſſion will be explained under the next diviſion of the hiſtorical epochs.

5. Frederic William, ſurnamed the great elector, ſucceeded his father in 1640; and in 1656 compelled the king of Poland to declare Pruſſia an independent ſtate, it having formerly been held of the Poliſh ſovereigns. This prince is highly praiſed by his royal deſcendant, the author of Memoirs of the houſe of Brandenburg, as the chief founder of the power of that family. He was ſucceeded in 1688 by his ſon,

6. Frederic III, who ſupporting the emperor in the conteſt for the Spaniſh ſucceſſion, was by him declared king of Pruſſia; under which title he was proclaimed at Konigſberg, on the 18th day of January, 1701, he himſelf placing the crown upon his head.

7. Frederic William II aſcended the throne in 1713; and in 1721 founded the city of Potſdam. But he was chiefly remarkable as the father of that great prince Frederic II,* who aſcended the throne in 1740, and died in 1786, after a long and glorious reign; the moſt memorable and laſting event of which was the acquiſition of Sileſia from the houſe of Auſtria in 1742.

8. The ſhort reign of his nephew is known to every reader. The failure of the Pruſſian tactics in France and Poland convinced Europe that the great Frederic had been the ſoul of the machine. But theſe checks were recompenſed by the completion of the Pruſſian acquiſitions

* In the regal genealogy the name of Frederic alone is conſidered as diſtinct from that of Frederic-William.

in

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in Poland. The reign of his ſon, the preſent monarch, has hitherto been diſtinguiſhed rather by prudence than enterprize.

The hiſtorical epochs of Pruſſia proper, are not deſerving of much elucidation. The knowledge of the ancients concerning this country has already been explained. A faint dawn of hiſtory, in the middle ages, diſcloſes at the mouth of the Viſtula the Pruzzi, a Slavonic nation, who were afterwards ſubdued by the knights of the Teutonic order.

1. This order originated A. D. 1190, in the camp of the Cruſaders before Acca, or Acre, from ſome Citizens of Lubec, and Bremen, who united to relieve the wants of their German brethren. Next year a bull of inſtitution was obtained from the Pope, ordering them to wear a black croſs on a white mantle, and to follow the rule of St. Auguſtin, with all the privileges granted to the knights templars. The cruſades to Paleſtine having failed, the knights directed their enterprize againſt the pagans of the N. of Germany, A. D. 1227; and in a few years conquered Pruſſia, and founded ſeveral cities.

2. The knights thus eſtabliſhed in Pruſſia directed their efforts againſt the Lithuanians, and other pagans in the eaſt. But repeated wars with Poland were leſs fortunate; and about 1446 the four chief cities of Pruſſia, Elbing, Thorn, Konigſberg, and Dantzick, withdrew their allegiance from the Teutonic order, and claimed the protection of Poland.

3. In 1466 Caſimir king of Poland forced the Teutonic order to abandon to him the eaſtern part of Pruſſia, and to pay homage for the weſtern part.

4. Albert of Brandenburg, grand-maſter of the order, obtained from his maternal uncle, Sigiſmund king of Poland, the hereditary inveſtiture of all that the order poſſeſſed in Pruſſia, and embraced the Lutheran religion. But particular grand-maſters continue to be appointed by the emperor of Germany.

5. In 1569 Joachim II elector of Brandenburg had obtained from the Poliſh monarch the ſucceſſion to the duchy of Pruſſia, in caſe the poſſeſſor died without heirs; but this addition of power and territory did not take place till 1618, when John Sigiſmund elector of Brandenburg

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denburg acquired this duchy; and in 1621 his ſucceſſor received the ſolemn inveſtiture from the king of Poland. Nor was it, as already mentioned, an independent ſovereignty till 1656, after which period the chief events may be traced under thoſe of Brandenburg.

Sileſia affords few materials for hiſtory. This country was formerly a Slavonic province of the Poliſh dominion; but in the fourteenth century was ſeized by John of Luxemburg king of Bohemia, (February 1339,) and paſſed with that ſovereignty to the houſe of Auſtria. The houſe of Brandenburg certainly had ſome ancient claims to this province, which were finally aſcertained by the ſword in 1742, as already mentioned.

As not only the recent acquiſitions in Poland are of far more comparative conſequence to Pruſſia, than either to Auſtria, or Ruſſia; and as in fact this ſovereignty is in poſſeſſion of the metropolis, and all the chief cities, and ports of Poland, and may be ſaid to exiſt only on the baſis of that ancient kingdom, which it repreſents in the modern balance of power, it will be proper here to repeat, in a few words, the chief epochs of the Poliſh hiſtory.

1. Even in the Roman times Poland was chiefly poſſeſſed by the Sarmatæ, or Slavons; and the Poles pretend to trace their dukes from the ſixth century. But the authentic hiſtory only begins with Piaſt, A. D 842. In 992 the chriſtian religion was introduced.

2. Uladſlas, duke of Poland, aſſumed the title of king A. D. 1320; and was ſucceeded by his ſon Caſimir ſurnamed the great.

3. The houſe of Jagellon dukes of Lithuania aſcended the Poliſh throne 1384, and ruled till 1572, in hereditary ſucceſſion, though with pretended election.

4. The throne of Poland becomes merely elective in the perſon of Henry de Valois 1574; but it was afterwards chiefly conteſted by native princes, and by the electors of Saxony.

5. John Sobieſki, king of Poland, in 1683 forced the Turks to raiſe the ſiege of Vienna, which was the laſt valiant action achieved by the Poles.

6. The recent annihilation of the monarchy.

From

From this general view of the component parts of the Pruſſian hiſtory it will appear that few ancient monuments can be expected in regions, where even a rude knowledge of the arts is comparatively ſo recent. Some Slavonic idols, caſt in bronze, conſtitute almoſt the only pagan antiquities: and the caſtles, and churches, erected after the introduction of the chriſtian religion, have few ſingularities to attract particular attention. The Poliſh coinage begins about the twelfth century, and is upon the German model. ANTIQUITIES.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenues.—Political Importance and Relations.

Religion. THE ruling religion of Pruſſia is the proteſtant, under its two chief diviſions of Lutheran and Calviniſtic. But after the recent acquiſitions in Poland it would ſeem that the greater number of the inhabitants muſt be Roman Catholic. The univerſal toleration which has been wiſely embraced by the Pruſſian monarchs, has had its uſual effect of abating theological enmity, and the different ſects ſeem to live in perfect concord.

Eccleſiaſtic Geography. The eccleſiaſtical geography of Pruſſia would be at once little intereſting, and of difficult detail. The biſhoprics in Poland and Sileſia ſeem to retain their ancient limits, while the power of the prelates is conſiderably abridged.

Government. As no veſtige of any ſenate or delegates from the people is known in this kingdom, it muſt be pronounced an abſolute government; but the ſpirit and good ſenſe of the nation unite with the wiſdom and mildneſs of ſucceſſive monarchs, (who have uniformly wiſhed to invite foreign ſettlers by views of eaſe and freedom, inſtead of expelling their own people by rigour,) to render the ſovereignty as conciliatory, and perhaps more beneficent, than if joined with a venal ſenate. The late

Laws. great monarch reformed many abuſes in the laws; but it cannot be diſguiſed that the tenour of his government was too military, a fault inherent in the Pruſſian ſyſtem. In ſome reſpects it is doubtleſs unavoidable, as muſt ever be the caſe, in eſtabliſhing a new power. And when we behold every petty prince in Germany ſurrounded by the idle parade of a little army, which far from being neceſſary at home is often

often ſold to other ſtates, we cannot wonder that the acquiſitions in Sileſia, and in Poland, muſt be maintained by armed force, inſtead of ancient attachment and habits of ſubjection; eſpecially when we conſider that Pruſſia is environed by the great military powers of Ruſſia and Auſtria. All political plans muſt be weighed by the circumſtances; and this dire neceſſity muſt exiſt till the benignity of the government ſhall have gradually ſecured the firm attachment of its new ſubjects. Laws.

Before the acquiſitions in Poland, this kingdom was ſuppoſed to contain only about five millions and a half of inhabitants, including one million and a half in Sileſia. But the late great acquiſition in Poland has greatly enlarged the number of inhabitants, which may be about eighty to the ſquare mile.* Population.

No foreign colonies have emigrated from Pruſſia; and it has been indeed a chief object with the monarchs to colonize the country itſelf. Colonies.

The army is ſuppoſed to amount to about 200,000, including about 40,000 cavalry. The tactics of the late able ſovereign conferred diſtinguiſhed reputation on the Pruſſian battalions, but they are now ſuppoſed not to exceed the Auſtrian; and military men conſider both as inferior to thoſe of Ruſſia, who ſeem to be juſtly regarded as the beſt troops in Europe. Army.

The acquiſition of Dantzick, and ſome other ports in the Baltic, may in time place Pruſſia among the maritime powers; but as little is to be gained or apprehended at ſea, it is natural that almoſt the ſole attention ſhould be paid to the land ſervice, which can alone ſecure the country againſt the exorbitant power of Ruſſia; for Auſtria has been ſo much enfeebled by the recent conteſt with France, that many years muſt elapſe before Pruſſia can have any apprehenſions from that quarter. Navy.

Before the additions of Poliſh territory the revenue was eſtimated at 3,880,000l. ſterling; and the expence of the army at 2,275,000.[1] Frederic II laudably expended about half a million ſterling yearly, in the improvement of his dominions. The entire revenue of Poland was not computed to exceed 439,546l. ſterling. If we even ſuppoſe half of this added to the Pruſſian revenue, the reſult would not be important; Revenues.

* See the note at the end of this chapter.

[1] Boettticher, p. 50.

Revenue. but as the Poliſh ariſtocracy carefully guarded againſt taxes to be defrayed by themſelves, it is to be preſumed that a new and more legitimate form of government will compel them to contribute largely to the expences of the ſtate; which, conſidering the bondage in which they have held the peaſantry, there will be no cauſe to regret. And it may expected, from the ſpirit of the Pruſſian government, that the ſums thus juſtly exacted from the rich will be in a great meaſure expended in the improvement of the acquired country, which may thus yield a fair revenue proportioned to its extent. The late great monarch, clearly foreſeeing the deſtructive conſequences of the funding ſyſtem, which has been embraced by ſome other European powers, with his uſual ability purſued the oppoſite plan of laying up a treaſure to ſerve in times of neceſſity, inſtead of adding the oppreſſion of taxation to the horrors of war. This treaſure is ſaid to have been expended by his immediate ſucceſſor; but ſtill Pruſſia has the ſupreme advantage of freedom from national debt, whence the ſmallneſs of the revenue has never been regarded as detracting from its poſition among the chief European powers.

Political Importance and Relations. The political importance and relations of this kingdom have impreſſed the European hiſtory of this century with new and diſtinct features. What Poland would have been, if bleſſed with a happier government, and executive energy, may be conceived from the preſent appearance of Pruſſia, excluſive only of one circumſtance, that of contiguity with the Ottoman dominions. An alliance with Pruſſia would be indeed of ſupreme importance to the Turkiſh empire; nor can it be the intereſt of Pruſſia to permit Ruſſia to extend her aggrandizements. Yet the Porte has few advantages to offer, while Ruſſia might ſecure the alliance of Pruſſia, by conceding a further part of Poland to balance any great acceſſion of Turkiſh territory.

In regard to the other chief powers of Europe, England, France, Ruſſia, and Auſtria, an alliance of the firſt with Pruſſia has repeatedly been enforced by circumſtances; but it cannot be diſguiſed that there is a more neceſſary and important connexion between Pruſſia and France, as both have cauſe to be jealous of the Auſtrian power, which

France

France can eſſentially injure, while England is by nature debarred from any preponderating interference. But a chief province of Pruſſian politics muſt be the defence of the country againſt the arms and influence of Ruſſia, for which purpoſe a moſt important ſtep would be a firm alliance, cemented by every political tie and intereſt, between Pruſſia, Denmark, and Sweden; which, if the Ruſſian empire remain undivided, will be the ſole barrier of continental independence.*

POLITICAL IMPORTANCE, &c.

* The following eſtimate of Pruſſian population is compiled from the ſub-diviſions of Hoeck, edit. 1801:

Eaſtern Pruſſia	940,000
Weſtern Pruſſia	521,625
Southern Pruſſia	1,100,000
New Eaſtern Pruſſia	700,000
A part of Poland incorporated with Sileſia	74,000
Pomerania	472,957
Brandenburg	755,577
New March	279,584
Magdeburg	275 262
Halberſtadt	111,875
Minden	67,952
Ravenſburg	81,812
Eaſt Friſeland	102,594
Cleves	100,000
Mærs	17,000
Mark	121 984
Gelder	48,000
Tecklenburg	17,234
Lingen	23,432
Sileſia	1,747,065
Anſpach	215,256
Baireuth	205,440
Neufchatel and Valengin	42,500
	8,021,149

The revenues he computes ſometimes in dollars, ſometimes in florins, and in ſuch minute ſub-diviſions that the calculation would be very laborious.

The Pruſſian army, according to a particular table, amounts to 178,897 infantry, and 39,867 cavalry; forming with artillery, &c. a total of 237,089.

The intelligent author of *La Pruſſe, et ſa neutralité*, 1800, 8vo, eſtimates, p. 15, the population at more than nine millions, but he is a panegyriſt. The revenue he puts, p. 19, at above five millions ſterling; and juſtly obſerves that this ſum muſt be eſtimated, not in itſelf, but as compared with the cheapneſs of proviſions, &c. ſo that it equals a far higher nominal revenue: and there is no national debt. The army, he ſays, p. 25, contains 224,144 men: there is no marine, the army requiring undivided attention.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.— Language.— Literature.— Education.— Univerſities.— Cities and Towns.— Edifices.— Roads.— Inland Navigation.— Manufactures and Commerce.

Manners and Customs.

THE manners and cuſtoms of a country compoſed of ſuch various inhabitants, recently united under one ſovereignty, muſt of courſe be diſcordant. Sileſia, Poland, and other Slavonic regions, may be ſuppoſed to contain many peculiarities, which diſtinguiſh them from the Germans. The reign of the great Frederic, who entertained a predilection for the French language and manners, contributed to impart a ſimilar tinge to his ſubjects; yet travellers appear not to have been much impreſſed with any ſtriking diſſimilitude between the manners of the Pruſſians and thoſe common to the other Germans. They have indeed remarked that, in compariſon with the Saxons, who are a lively and contented people, the Pruſſians appear dull and gloomy; a character which they impute partly to the military government, and partly to the general anxiety which muſt have been excited by the repeated dangers to which their country was expoſed, when contending with the powers of Ruſſia and Auſtria. As to the Poles, they ſeem full of life and action, but their features and general appearance are rather Aſiatic than European. "Men of all ranks generally wear whiſkers, and ſhave their heads, leaving only a circle of hair upon the crown. The ſummer dreſs of the peaſants conſiſts of nothing but a ſhirt and drawers, of coarſe linen, without ſhoes or ſtockings, with round caps or hats. The women of the lower claſs wear upon their heads a wrapper of white linen, under which their hair is braided, and hangs down in two plaits. I obſerved ſeveral of them with a long piece of white linen hanging round the ſide of their faces, and covering their bodies below their

their knees: this ſingular kind of veil makes them look as if they were doing penance. MANNERS AND CUSTOMS.

"The dreſs of the higher orders, both men and women, is uncommonly elegant. That of the gentlemen is a waiſtcoat with ſleeves, over which they wear an upper robe of a different colour, which reaches down below the knee, and is faſtened round the waiſt with a faſh or girdle; the ſleeves of this upper garment are, in warm weather, tied behind the ſhoulders; a ſabre is a neceſſary part of their dreſs, as a mark of nobility. In ſummer the robe, &c. is of ſilk, in winter of cloth, velvet, or ſtuff, edged with fur. They wear fur caps or bonnets, and buſkins of yellow leather, the heels of which are plated with iron or ſteel. The dreſs of the ladies is a ſimple polonaiſe or long robe, edged with fur."[1] The ſame author obſerves that the Poliſh peaſants differ widely in their dreſs from the Ruſſian; the former in particular ſhaving their heads, and leaving only a circle of hair in the middle, while the Ruſſians wear their hair down to their eyebrows, and over the ears, and cut it ſhort around the neck.

The manners and cuſtoms of the people of Sileſia ſeem to reſemble thoſe of their neighbours the Bohemians; but both races have been ſo much melted down into that of the Germans, that the peculiar features are minute and unimportant.

The ruling language of Pruſſia is the German, which it is probable may in time ſupplant the Poliſh, in thoſe parts which are ſubject to Pruſſia and Auſtria. Language.

The literature of Pruſſia may well be conceived to be of recent origin; nor even after the reſtoration of letters did any remarkable author ariſe in the electorate of Brandenburg. But Dantzick was the native country of Cluverius, an eminent geographer; and Copernicus, a great name in aſtronomy, was born at Thorn, as his predeceſſor Regiomontanus was at Konigſberg, his name being a Latin tranſlation of that of his birth-place. Sileſia has likewiſe few pretenſions to literary fame, nor are thoſe of Poland highly illuſtrious. Kadlubko, the moſt ancient Poliſh hiſtorian, wrote in 1223; and ſince his time there has been a ſucceſſion of Latin chroniclers. But as the exertions of German Literature.

[1] Coxe's Trav. into Pol. &c. i 194.

genius

Literature. genius in the native language have been little known till the preſent century, the literature of Pruſſia has few pretenſions, and muſt yield to that of Saxony, the claſſical ſeat of German letters. Frederic the great had a mean opinion of German literature; and, though he wrote in French, muſt be claſſed among the moſt diſtinguiſhed authors of his kingdom. Nor is Count Hertſberg, his miniſter, without merit. Among the other names either natives or who flouriſhed in Pruſſia, may be mentioned Ramler the poet, Nicolai an original writer of romances, &c., Buſching the geographer, Spalding, and Mendelſohn.[z] Nor has Pruſſia yet produced any artiſts, painters, ſculptors, or architects, of diſtinguiſhed reputation.

Education. The ſtate of education in this country ſeems to be equally neglected as in the far greater part of Europe. The number of recruits wanted for the army, and the conſequent uncertainty of deſtination for life, muſt ſingularly impede the national inſtruction.

Univerſities. There are however ſeveral univerſities, ſuch as that of Frankfort on the Oder, founded by Joachim elector of Brandenburg in the year 1516. Konigſberg in Pruſſia was founded in 1544. Of the Poliſh univerſities Cracow has fallen to Auſtria, and was founded in 1364; and Wilna, founded in 1570, to Ruſſia. Poſna or Poſen has become ſubject to Pruſſia.

Cities and Towns. Among the chief cities of Pruſſia muſt firſt be mentioned Berlin, ſituated on the banks of the river Sprey, and regularly fortified. It was founded in the twelfth century, by a colony from the Netherlands, and contains upwards of 140,000* inhabitants, being about four miles and a half long and three wide; but within this encloſure are many gardens, and ſometimes even fields; nor is it eaſy to reconcile 6000 houſes, as enumerated by Rieſbeck, with the number of inhabitants computed by Boetticher. However this be, the city is more remarkable for the elegance of the buildings, than for its wealth or induſtry, many beautiful houſes being let in ſtories to mechanics.

Berlin.

Konigſberg. Next to Berlin may be mentioned Konigſberg, of which the population is computed at about 52,000. This city was founded in the thirteenth century, and is well fortified. It maintains a conſiderable trade by the river Pregel, which flows into the gulph of Dantzick.

[z] Rieſbeck's Trav. iii. 44.

* Hoeck ſays 142,099; houſes 6950.

Breſlaw, the capital of Sileſia, has been long celebrated as one of the moſt beautiful cities in Germany. It is of uncertain antiquity, but was deſtroyed by the Tatars in the thirteenth century. The population is at leaſt equal to that of Konigſberg; and it has ſeveral manufactures, the linens of Sileſia being particularly celebrated. The ruling religion is that of Luther. Cities and Towns. Breſlaw.

Among the chief cities of Pruſſia muſt not now be forgotten Warſaw, the former capital of Poland; and Dantzick, an independent city of ancient fame. Warſaw ſtands partly in a plain, partly on a gentle aſcent riſing from the Viſtula, but the appearance is melancholy from the general poverty of Poland under its former unhappy government.[3] The population was computed at 70,000, including the unfortunate ſuburb of Praga; but it muſt have been much thinned by the deſtructive ſword of Suwarrow. Yet Hoeck ſtates it at 66,572. Warſaw.

Dantzick contains about 36,000 inhabitants, and was known as a commercial town even from the tenth century. It was conſidered as the chief city of the Hanſeatic league, and was enlarged and adorned by the knights of the Teutonic order. It muſt ſtill be conſidered as the chief ſtaple for the exportation of the corn and the other products of Poland; but its commerce has been for ſome time on the decline. Dantzick.

In the countries removed from the ſouthern limits of ancient civilization, any formal enumeration of cities becomes leſs important, becauſe thoſe places which make an appearance on maps often derive their ſole importance from their ſituation amidſt ſurrounding deſerts; and the expected city becomes, upon examination, an inſignificant town. Yet a few other cities of the Pruſſian dominions deſerve geographical enumeration, in a progreſs from the more ancient territories in the weſt, to the recent acquiſitions in the eaſt.

In the electorate of Brandenburg, and in the adjoining duchy of Magdeburg on the weſt, may be named Brandenburg, a ſmall city of 6,000 inhabitants; and Frankfort on the Oder which contains about 16,000. Potſdam, a recent city, is ſituated on an iſland, amidſt lakes and canals, and no expence has been ſpared in its decoration. The royal caſtle Other Towns. Potſdam.

[3] Coxe's Pol. i. 206.

Cities and Towns.

was built in 1663, and it has ſince been a favourite reſidence of ſeveral Pruſſian monarchs. The inhabitants are computed at 26,000. The other cities, or rather towns in Brandenburg, ſeldom contain 5000 inhabitants; but the duchy of Magdeburg preſents the capital ſo called, which is ſuppoſed to hold about 26,000 ſouls, and is ſtrongly fortified with a citadel on an iſle in the Elbe. This city dates its origin from the time of Charlemagne; and can boaſt of elegant ſtreets and flouriſhing manufactures. The Imperialiſts taking it by ſtorm in 1631, a dreadful ſlaughter enſued, the inhabitants who periſhed being computed at about 10,000. In the ſame duchy, but disjoined by part of Upper Saxony, ſtands alſo Halle on the Saale, more than fifty miles to the S. of Magdeburg: the inhabitants of Halle are computed at 21,000. Nor muſt Halberſtadt, the capital of an adjoining principality, be omitted, as it contains about 12,500 ſouls; in which number it is rivalled by Quedlinburg in the ſame province. It may be remarked, in paſſing, that the Weſtphalian dominions of Pruſſia preſent no city of much account, and the remote town of Neufchatel contains only about 6000 ſouls.

Magdeburg.

On proceeding to Pomerania on the N. firſt occurs Stettin, a city on the Oder of ſome trade, and about 18,000 inhabitants. Thoſe of Stargard, in further Pomerania, are not eſtimated at above 6000.

In Pruſſia, properly ſo called, may be named Elbing, which is ſuppoſed to hold 14,000 ſouls. The other ſecondary towns rarely exceeded 3000 inhabitants, till acquiſitions of adjacent territory gave to Pruſſia Thorn, with a population of 10,000. Excepting Breſlaw, the capital, already mentioned, there are only three towns in Sileſia, which contain more than 6000 inhabitants; namely Glogau, Hirſchberg, and Schweidnitz. Nor if we exclude Warſaw and its ſuburbs, do any of the towns recently acquired in Poland even equal this population.

Edifices.

Some of the moſt ſplendid edifices of this country adorn Berlin the capital, ſuch as the palace and the theatre. But the other grand buildings ſeem not to have impreſſed travellers with veneration, being barracks for ſoldiers and the like.[4] And the city itſelf is almoſt entirely built with brick, though the fronts of the houſes are diſguiſed with

[4] Wraxall's Mem. i. 101.

ſtucco.

ſtucco. The palace at Potſdam deſerves ſuperior applauſe; and on an eminence near that city ſtands the royal villa of Sans Souci, which however can claim no grandeur of external architecture. Konigſberg, and Dantzick, alſo offer to view reſpectable public buildings; but in general this kingdom yields even to Ruſſia in this reſpect. Edifices.

The advantages of inland navigation ſeem little known or cultivated in the Pruſſian dominions; and though ſeveral ſmall canals might be mentioned, yet they rather belong to the office of the topographer than to a general ſyſtem of geography. Inland Navigation.

If we except the linens of Sileſia, the manufactures of the Pruſſian dominions are of ſmall importance. Yet they afford for home conſumption, glaſs, iron, braſs, paper, and woollen cloth; and Frederick II introduced a ſmall manufacture of ſilk. Even the exports of Dantzick conſiſt almoſt entirely of timber, corn, tallow, and ſimilar articles. Manufactures and Commerce.

Nor if we except the ancient ſtaple of grain ſo abundant in the level plains of Poland, can the commerce of Pruſſia appear in an important light. Amber is by nature conſtituted a monopoly of the country, but faſhion has rendered this branch of commerce inſignificant. Yet among the conſiderable exports may be named excellent timber of all kinds, ſkins, leather, flax, and hemp; nor muſt the linens of Sileſia be paſſed in ſilence, many of which are ſent into Holland, and ſold under the name of Dutch manufacture. In return Pruſſia receives wine, and other products of more ſouthern and favoured countries.*

* For more minute particulars Hoeck may be conſulted. The amber amounts to near 200 tons annually. In 1777 there were in further Pomerania 219 991 mulberry trees; yet the pure ſilk is only computed at 680 pounds weight. Brandenburg exports timber, from Hamburg, to the amount of one million of dollars. In Sileſia (1796) there were 40,603 perſons employed in the linen manufacture; and 13,540 in the woollen.

CHAPTER IV.

NATURAL GEOGRAPHY.

Climate and Seasons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Forests.—Botany.—Mineralogy.—Mineral Waters.—Natural Curiosities.

CLIMATE AND SEASONS.

THE climate of the Prussian dominions is, upon the whole, cold and moist. That of Brandenburg, which is an extensive level of sand, and that of Pomerania, may be regarded as more free from humidity than that of Prussia proper, which, as Busching informs us,[1] has about eight months of winter, the autumns being often deluged with rain. The northern part of Poland, which has fallen under the Prussian sceptre, abounds with forests and marshes, which cannot be supposed to render the air salubrious. The lower parts of Silesia are regarded as the most healthy and fertile provinces of the monarchy; but the southern, and western parts of that duchy, bordering on elevated mountains, long covered with snow, are exposed even in summer to severe freezing gales.

Face of the Country.

In considering the general appearance of these extensive regions, Brandenburg is a sandy, and barren country, but Prussia proper formerly abounded in woods, and displays superior fertility, a character which may also be extended to Prussian Poland, an immense plain. Silesia, on the contrary, displays a pleasing diversity, being level and open towards Poland, but separated from Hungary on the S. by the Carpathian mountains, a branch of which proceeding N. W. divides this country from Moravia, and Bohemia. It is every where watered by the Oder, and its tributary streams: nor is there any deficiency of rivers in the other parts of the Prussian sovereignty.

Soil and Agriculture.

The soil of Brandenburg is meagre, and even the space between Berlin and Potsdam resembles a wilderness; but that of Prussian

[1] iii. 5.

Poland

Soil and Agriculture.

Poland is loamy and fertile. The northern extremity of Silesia shares the sandy soil of Brandenburg, yet this province is in general extremely productive, and abounds in fruits and culinary vegetables.

Agricultural improvements are little known, and Brandenburg chiefly produces scanty crops of rye; but Prussia proper, and the Polish provinces display every kind of grain, and esculent plant, that can flourish under such a latitude; and among the productions of Silesia must be classed maize, and even vines, but the wine is of inferior quality.

Such are the general ideas to be derived from Busching, and other German geographers; but an intelligent traveller of our own country has thrown a stronger light on this important topic, and a few of his observations shall here be transcribed.[2] The soil of Prussia proper he represents as sandy and ill-cultivated, yet the peasants, though oppressed by heavy taxation, being free from the wanton extortions, and capricious personal services, exacted by the Polish aristocracy, displayed signs of comparative ease and prosperity. The soil being light, two oxen, or sometimes even a small horse and a cow, are sufficient to draw the plough. The chief crop was buck-wheat, which they found more profitable than barley; and this grain was generally cultivated, along with a few Swedish turnips, except in the neighbourhood of Dantzick, where the abundance of manure assured plentiful crops of wheat. In different parts of Silesia the land is let in farms, as in England, and the peasants hired as day labourers; while under the detestable government of Poland they were mere slaves, and every avenue to industry was barred. In speaking of the continuous sandy soil of Brandenburg, he observes, "they find that the only very profitable crop upon these sands is buck-wheat, which they sow in large quantities, and they get a product which equals the best soils applied to that grain: when a piece of land has been more carefully managed than ordinary, it will yield a good crop of rye; but as to wheat or barley it is hardly to be seen." Between Berlin, and Saxony he finds a continuation of the same crop, with turnips and rye, which he sup-

[2] Marshall's Travels. iii. 240, &c.

posed

Soil and Agriculture.

poſes to be the ſole agricultural products in theſe regions. In Saxony the ſoil becomes a good loam, yielding tolerable crops of wheat.[3]

Rivers. Elbe.

Among the chief rivers of the Pruſſian dominions may be firſt mentioned the Elbe, which riſes in the S. of Bohemia, and pervades the duchy of Magdeburg. The Spree, which paſſes by Berlin, falls into

Oder.

the Havel, a river tributary of the Elbe. The Oder, the Viadrus of the ancients, may be regarded as a river entirely Pruſſian: it riſes in the mountains of Moravia, and after watering Sileſia, Brandenburg, and Pomerania, joins the Baltic, after a courſe of about 350 miles.

Viſtula.

Next appears another noble ſtream, the Viſtula, which riſing in the Carpathian mountains, paſſes Warſaw, and joins the ſea near Dantzick, after a circuit of about 450 miles. The Pregel paſſing by Konigſberg, ſprings from ſome lakes and marſhes in Pruſſian Poland; and the Memel, a ſuperior river, now forms, in part, the Pruſſian boundary on the eaſt.

Lakes.

The lakes in the Pruſſian dominions are numerous, eſpecially in the eaſtern part, where among others may be mentioned the Spelding See, which, with its creeks, extends more than twenty Britiſh miles in every direction. That region contains many other lakes, which ſupply the ſources of the river Pregel. At their eſtuaries the rivers Oder, Viſtula, and Memel, preſent ſingular inland ſheets of water, in the German language called *Haffs*; that of the Oder being ſtyled Graſs Haff; that of the Viſtula, Friſch Haff (with another inland creek called the lake of Drauſen); and that of the Memel, Curiſch Haff. The Friſch Haff is about ſeventy miles in length, and from three to ten miles broad, being ſeparated from the Baltic by a long ſlip of land, ſaid to have been thrown up by the tempeſts and waves about the year 1190. This lake or bay is of ſmall depth, and will not admit veſſels of much burthen.[4]

Curiſch Haff.

The Curiſch Haff, ſo called from its ſituation in the ancient duchy of Courland, is about 60 Britiſh miles in length, and about 30 in its greateſt breadth. A ſimilar ridge of land divides it from the Baltic; and it is full of dangerous ſhelves, and infeſted by frequent ſtorms.

[3] Marſhall's Travels, iii. 288.

[4] Buſching, iii. 10.

Magdeburg,

Magdeburg, Brandenburg, Pomerania, Pruſſia, and Poland, are in general level countries; and the only mountains in the Pruſſian dominions are thoſe of Sileſia. The mountains in the S. and W. of this province may be regarded as a northern branch of the Carpathian chain, which itſelf forms the moſt ſouthern boundary. This branch extends from Jablunka S. E. to Friedberg in upper Luſatia, N. W. near 200 Britiſh miles in length, and is called Sudetiſche Gebirge, or the Sudetic mountains; but has alſo more minute appellations, the N. W. part towards Luſatia being called Rieſen, the middle part the Bohemian, and the S. E. the Moravian chain. Of this remarkable chain, which has eſcaped the attention of moſt geographers, and drawers of maps, the higheſt peak in the mountains of Rieſen, or of the giants, is the Schneekoppe, or ſnow head, in the Bohemian part, the Eule, or Owl, and the Zotenberg. The Moravian ridge divides into inferior branches, one of which forms a northern boundary of the principality of Troppau. In the north-weſtern parts of Sileſia are alſo detached mountains of conſiderable height,[5] as the Spitzberg, and Gratzberg, the Ruheberg, the Georgenberg, and the Reichenbach. Of theſe mountains the preciſe height ſeems not to be aſcertained, yet they may ſafely be concluded to yield greatly to the Carpathian chain, an account of which will be found in the deſcription of the Auſtrian dominions.*

Mountains.

Sudetic Chain.

Few parts of the Pruſſian kingdom are deſtitute of woods and foreſts, which particularly abound in Pruſſia proper, and in the recent Poliſh acquiſitions. Towards Hungary Sileſia preſents a continuation of thick foreſts, which conſpire with the elevated mountains to form an impenetrable barrier.

Foreſts.

[5] Buſching, vi. 214.

* Buſching, vi. 283. informs us that the Zottenberg, between Schweidnitz, and Breſlau, is a celebrated mountain ſuppoſed to be the Aſciburgius of Ptolemy; which however rather ſeems to be the ridge of Erzgeberg. The height has been computed at about 2120 Rheniſh feet. On the S. it is connected with the Sudetic chain, but on all other parts is ſurrounded by a vaſt plain, and is ſuppoſed to derive its name from the neighbouring village of Zobten. This mountain conſiſts entirely of ſerpentine with ſome hornblende. Kirwan, Geol. Eſſ. 204.

Fabri computes the higheſt peak of the Rieſen at 4930 Rheniſh feet above the ſea, and the Zottenberg at 4700. The Sileſian mountains, he adds, yield ſome ſilver, tin, copper, and cobalt, with conſiderable quantities of calamine, lead, and iron: and there are quarries of marble, freeſtone, alabaſter, ſlate, and potters clay. Coal abounds near Schweidnitz.

Botany. The indigenous vegetables of the Pruſſian dominions have hitherto been viewed in only a very curſory manner. Among theſe there do not ſeem to be any which have not already been ſufficiently noticed in the preceding accounts of Britain, and Auſtria. The mountainous ridges of Pruſſia being few, and of little importance, there is in conſequence a great deficiency of alpine plants, the prevailing vegetables being thoſe that inhabit level and ſandy diſtricts: the few following ones are all that it ſeems neceſſary to notice conſiſtently with our general plan. Calla paluſtris; aſarum europæum, *aſarabacca*; iris Sibirica, *Siberian iris*; lilium bulbiferum and martagon, *orange* and *martagon lilies*; laſerpitium latifolium, *laſerwort*; and nicotiana tabacum, *tobacco*, this plant, originally a native of America, and probably alſo of the eaſt, having been long cultivated in Pruſſia, has at length eſtabliſhed itſelf in the ſoil, and is found in the ploughed fields, and hedges as a common weed.

Zoology. The breeds of horſes, and cattle ſeem not to have impreſſed travellers with any diſtinction from thoſe of the adjacent countries; and few parts are calculated for excellent breeds of ſheep. The urus, or large and ferocious wild cattle of Lithuania, have alſo appeared in Pruſſia proper, but the race ſeems nearly extinct. One of its chief haunts was the foreſt of Maſovia not far from Warſaw. The marmot, and a ſpecies of caſtor, may alſo be claſſed among the wild animals; and among the more ferocious the lynx, an animal of the colder climates, about the ſize of a fox, but the face and motions rather reſemble thoſe of the cat. Nor are theſe regions unviſited by the bear and the elk. The Oder ſometimes affords ſturgeon of a large ſize.

Mineralogy. The mineralogy of the Pruſſian dominions will not afford an extenſive theme. Sand and plains rarely contain minerals, and even the mountains of Sileſia boaſt of few hidden treaſures. Yet in the ſouthern diſtricts of that province there were formerly mines of gold and ſilver, but the produce did not defray the expence, though in the time of Buſching two or three of the latter metal continued to employ ſome labourers. Mines of copper and lead however ſtill exiſt, and there are conſiderable founderies of iron. In the mines of Sileſia is found abundance of chryſopraſe, which has been detected in various

ſtages

ſtages of tranſition, and appears to be a ſemi-opal deriving its green tincture from nickel. Agates, jaſpers, and clear cryſtals of quartz, vulgarly called diamonds, are alſo found in the Sileſian mountains. Coal, a more uſeful mineral, occur in various parts of Sileſia, and the level diſtricts ſometimes offer good peat moors. Mineralogy.

But the moſt diſtinguiſhed and peculiar mineral production of Pruſſia is amber, which is chiefly found on the Samland ſhore of the Baltic, near Pillau, on a neck of land formed by the Friſch Haff, which ſeems to have been the chief ſeat of this mineral from the earlieſt ages. Amber is allowed by the beſt mineralogiſts to be decidedly of vegetable origin, but mineralized by ſome operation of nature, ſimilar to that by which animal fleſh is converted into a ſubſtance reſembling ſpermaceti.[6] It is found at the depth of about 100 feet repoſing on wood coal, in lumps of various ſizes, ſome five pounds in weight, and is often waſhed on ſhore by tempeſts. By friction it becomes electric, and has imparted its Greek name to the modern philoſophy and doctrines of electricity. It adds about 5000l. yearly to the royal revenue. Amber.

Sileſia preſents one ſpring of hot water at Warmbrun, near Hirſchberg, which is, as is believed, the only mineral water worth notice in the Pruſſian dominions. Mineral Waters.

The Sudetic chain of mountains has been little explored, and the level parts of the Pruſſian dominions can, of courſe, afford few objects of natural curioſity, if we except the mines of amber above-mentioned. Natural Curioſities.

[6] Kirw. ii. 66.

SPAIN.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

Names. THOUGH Spain appear to have been known to the Phœnicians, near 1000 years before the birth of Chriſt, and their Tarſiſh to have been the little iſle of Tarteſſus, near Gades, yet it ſeems hardly to have been diſcloſed to the Greeks in the time of Herodotus. It is probable that the whole country was the Tarſiſh of the Phœnicians and Hebrews, though the learned Huet rather reſtrict it to Betica, or the ſouthern part of Spain; which region was, as is well known, the Mexico of the Phœnicians, who from it imported large quantities of ſilver. When the Greeks eſtabliſhed a colony at Marſeilles, they muſt not long after have diſcovered the northern part of this fertile region; which from the noble river Iberus, or Ebro, they called Iberia; and from its extreme ſituation in the weſt it was alſo ſtyled Heſperia. The Romans, probably from a native term, have fixed and handed down *Hiſpania*; which has been variouſly adapted to the idiom of modern languages.

Extent. Spain lies between the 36th and 44th degrees of north latitude; and its weſtern extremity is about 9°. in longitude W. from London. The greateſt length W. to E. is about 600 miles; the breadth N. to S. more than 500; thus forming almoſt a compact ſquare, (if we include

Portugal

Portugal in this general view of the country,) and ſurrounded on all ſides by the ſea, except where the Pyrenean chain forms a grand natural barrier againſt France.* But as the preſent eſtimate muſt exclude Portugal, which is reſerved for another article, it may be obſerved that the boundaries betwixt theſe two kingdoms depend on artificial conventions, and not on rivers or mountains, or other remarkable features of ſeparation. Spain is ſuppoſed to contain about 148,000 ſquare miles; which, eſtimating the population at 11,000,000, yield 74 perſons to the mile ſquare. EXTENT.

The original population of Spain ſeems to have conſiſted of Celts from Gaul, and of Moors, Mauretani, from Africa; but the latter, a more warlike race, expelled the former, and even paſſed into Aquitain in France. After the German Gauls had colonized the ſouth of modern France, where they were the Galli Braccati of antiquity, they began to make expeditions into Spain, where they ſeized the region to the N. E., and became the Celtiberi of claſſical geography. Hence the names of rivers and mountains in Spain rarely diſplay a Celtic origin, being often African, and unlike thoſe to be found in other parts of Europe, though recorded many centuries before the arrival of the Mahometans; and often Gothic, though mentioned before the Gothic invaſion in the fifth century. It is probable that the African ſettlers were not a little aſſiſted in the expulſion of the primeval Celts by the Phœnicians, and afterwards by the Carthaginians, whence the latter maintained ſuch ſway in diſtant parts of this country. But the records of Punic hiſtory being loſt, we muſt be contented to begin with the African colony; which was ſucceeded, probably about 150 years before the Chriſtian era, by the incurſions and ſettlement of the Celtiberi, and other Gaulic colonies, who were only ſtyled Celts, as having paſſed from Celtic Gaul; for the names of places, and other ſtrong indications, denote their gothic origin. Original Population.

Towards the eaſt muſt be added large colonies of Carthaginians, and afterwards of Romans; for this country, which rivalled Italy in ſoil and climate, invited an unuſual number of the latter, and produced

* The river Bidaſoa forms the W. boundary, and near its mouth is the iſle of Pheaſants. Irum, near the Bidaſoa, is the laſt town in Spain. Dillon, 133.

Original Population.

many claſſical authors. From its natural ſituation Spain has derived a greater mixture of inhabitants than perhaps any other European country. In the fifth century it was conquered by the Vandals; but, being afterwards weakened by their ſettlements in Africa, they were ſubdued by the Viſigoths, who founded the modern kingdom of Spain, and from whom the more ancient families ſtill pretend to derive their origin. The Mahometan Moors having been expelled, they muſt not be conſidered in the eſtimate, though a few families may be of Arabian extract: and the modern Spaniards may be conſidered as deſcended from the African Iberians, the Celtiberians, or German Gauls, the Romans, and the Viſigoths.

Progreſſive Geography.

The progreſſive geography of Spain is alſo very various. Little is known till the Roman conqueſt, when Spain was divided into three provinces, Tarraconenſis, or the N. E. half of Spain; Bætica, or Betica in the S.; and Luſitania on the weſt, extending from the river Duro in modern Portugal on the north, to the preſent boundary of that kingdom on the ſouth. After the ſubjection by the Viſigoths theſe diviſions ſeem to have paſſed into oblivion: but the conqueſt by the Moors eſtabliſhed a new and important diſtinction in Spaniſh Geography, that of Chriſtian and Mahometan Spain; and which is in ſome meaſure blended with the topic next to be conſidered.

Hiſtorical Epochs.

The chief hiſtorical epochs of Spain are:

1. The original population by the Africans, and German Gauls.

2. The Carthaginian acquiſitions in Spain.

3. The conqueſt by the Romans, who maintained poſſeſſion for more than five centuries.

4. The ſubjection of Spain to the Vandals, about the year 415.

5. The conqueſt of Spain by the Viſigoths under Euric, excepting Galicia, held by the Suevi, who had entered with the Vandals. The Galicians have to this day a diſtinct character of ſuperior induſtry. In Euric, A. D. 472, commences the modern kingdom, and hiſtory of Spain. The Viſigoths were Arians.

6. The conqueſt by the Arabs, or Moors, which began A. D. 709, and ſoon extended over all Spain, except the mountains of Aſturias, where

where king Pelagius maintained a confined domination over that diſtrict, and Biſcay. His deſcendants fixed the royal reſidence at Oviedo, built in 761, and not only defended their ſmall territory, which was naturally fortified with chains of mountains, but ſoon regained Galicia, and part of Leon and Caſtile. In 914, as the territory extended towards the ſouth, the kings began to reſide at Leon, and thence derived their title; to which, in the eleventh century, was added that of Caſtile. But the Moors muſt be regarded as the chief poſſeſſors of Spain, till the middle of the thirteenth century.

7. The Mooriſh domination in Spain, which was conducted by governors appointed by the Chalifs till A. D. 756, when Abdoulrahman ſeized the ſceptre of Spain, and became the mooriſh king of Cordova, and firſt chalif in the weſt. His ſucceſſors continued to diſplay great wealth and power; and under their ſway the commerce of Spain became very extenſive.[1] This dynaſty continued till A. D. 1038, when the Spaniſh Chalifate expired, and the Mooriſh governors of ſeveral provinces uſurped the royal ſtyle, in Cordova, Seville, Valentia, and Granada; who nevertheleſs rivalled the ſmall Chriſtian kingdoms till the middle of the thirteenth century, when, as already mentioned, the latter became preponderant, and Spain reſumed her ſituation among the ſtates of Chriſtendom.

8. The kingdoms of Caſtile and Leon ſometimes fell to diſtinct heirs; and the hiſtorical confuſion is increaſed by the ſmall kingdom of Navarre, the capital of which was Pampelona, a royalty which commenced A. D. 857: by that of Arragon, A. D. 1035: and other ſubdiviſions.

9. The reign of Alphonſo the wiſe, which began A. D. 1252; and which rivalled thoſe of the Spaniſh Chalifs in the protection afforded to the arts and ſciences.

10. The conqueſt of the kingdom of Granada, the laſt of the Mooriſh royalties; and the junction of the important crowns of Caſtile and Arragon, in the perſons of Ferdinand and Iſabella.

[1] Hiſt. de L'Afriq. et de L'Eſp. ſous la Domination des Arabes, par M. Cardonne. Paris 1765. 3 vols. 12mo.

11. The

Historical Epochs.

11. The reign of Charles V, ſon of Philip of Auſtria, who married the heireſs of Arragon and Caſtile, and eſtabliſhed the Spaniſh monarchy on its preſent baſis. The wealth of America, diſcovered in the reign of Ferdinand and Iſabella, now began to impart exuberant ſupplies, and the power of Spain arrived at its zenith.

12. Acquiſition of Portugal by Philip II, A. D. 1580.

13. The revolt of Portugal under Philip IV, A. D. 1640; which has ſince exiſted as a ſeparate kingdom, after having been ſubject to the Spaniards for ſixty years.

14. The termination of the Auſtrian Dynaſty, by the death of Charles II, Nov. 1, 1700: and the acceſſion of the houſe of Bourbon, ſince which no epoch of ſingular conſequence has ariſen.

Antiquities.

Of the firſt of theſe epochs it can hardly be ſuppoſed that any remains ſhould exiſt, except a few tumuli, and other rude monuments. Nor are there any certain relics of the Carthaginians in Spain, except coins, which have been found in conſiderable numbers.

The Roman antiquities are, on the contrary, ſo numerous that to enter into details on the ſubject would be prolix, and foreign to the nature of this work. The aqueduct at Segovia is one of the nobleſt of the Roman edifices.[2] It conſiſts of 159 arches, extending about 740 yards; and is rather more than 94 feet in height, where it croſſes the valley. Morviedo, the ancient Saguntum, preſents many curious remains of antiquity. The theatre is capable of receiving near 10,000 people, and is hewn out of the ſolid rock; a labour not ſo great as might be imagined, as the Spaniſh rocks are generally gypſeous, or calcareous. Tarragona, the ancient Tarraco, and capital of two thirds of Spain, alſo contains many curious monuments. In ſhort the traveller will find abundance of Roman remains ſpread over this delightful country.

The Viſigothic kings have left few relics, except their coins, which are ſtruck in gold; a metal then unknown to the other European mints, and ſeemingly native. The churches, &c. of that period were probably deſtroyed by the Mooriſh conqueſt.

Numerous and ſplendid are the monuments of the Moors in Spain. The moſque at Cordova was begun by Abdoulrahman, the firſt chalif.

[2] Townſend, vol. ii. p. 115.

The

ANTIQUITIES.

The ſecond chalif of that name reared the walls of Seville. But theſe princes were far exceeded in magnificence by Abdoulrahman III, who built a town three miles from Cordova, which he called Zehra, after the name of one of his female favourites; and ordered a palace to be conſtructed by the moſt ſkilful architects of Conſtantinople, then the chief abode of the arts and ſciences (A. D. 950.).[3] In this palace were reckoned 1014 columns of African and Spaniſh marbles; while Italy had ſupplied 19, and the Greek emperor had tranſmitted 140 of ſurpriſing beauty. The hall was decorated with marble, and maſſy gold; and in the midſt of the cieling was hung the famous pearl which the Emperor Leo had ſent to the Chalif. The expence of Zehra, the palace, and gardens, was computed at 300,000 dinars of gold annually, for twenty-five years, or about 2,500,000l. The mines of gold and ſilver, then wrought in Spain, conſpired with extenſive commerce to afford an ample revenue. Yet on the death of this magnificent prince a paper was found in his hand-writing, declaring that, during a proſperous reign of fifty years, he had only enjoyed fourteen days that were uniformly pleaſant and agreeable. The moſque at Cordova ſtill ſurprizes travellers with the multitude of columns, which are computed at 800; but the palace of Zehra appears to have been annihilated in the barbarous and fanatic wars of the middle ages: and Granada, the laſt Mooriſh kingdom, having been ſubdued after the arts and ſciences began to revive, it is natural there to expect the beſt preſerved remains of Moreſque antiquity. Nor will their Alhambra diſappoint this expectation, as the reader may judge from Mr. Swinburne's elegant drawings; but for the ſake of brevity Mr. Townſend's deſcription ſhall be preferred. "You enter firſt into an oblong court of 150 feet by 90, with a baſon of water in the midſt, of 100 feet in length, encompaſſed by a flower border. At each end is a colonade. From hence you paſs into the court of the lions, ſo called becauſe the fountain in the middle is ſupported by thirteen lions. It is adorned with a colonade of 140 marble pillars. The royal bedchamber has two alcoves, adorned with columns, and a fountain between them, in the middle of the room.

[3] Cardonne, ubi ſupra.

Antiquities.

Adjoining to this are two hot baths. The great hall is about 40 feet ſquare, and 60 in height, with eight windows and two doors, all in deep receſſes. Between this and the oblong court is a gallery of 90 feet by 16. All theſe lower apartments have fountains, and are paved either with tiles or marble, in checkers. The idea of the cielings is evidently taken from *ſtalactites*, or drop-ſtones, found in the roofs of natural caverns. The ornaments of the friezes are arabeſque, and perfectly accord with the Arabic inſcriptions, which are here ſuited to the purpoſe for which each apartment was deſigned." Above is a ſuit of elegant apartments for the winter. This edifice was finiſhed A. D. 1336.

The chriſtian antiquities of the middle ages conſiſt of numerous churches, caſtles, and monaſteries, as uſual in other European countries.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenues.—Political Importance and Relations.

Religion.

THE religion of Spain is the Roman Catholic, which in this country and Portugal has been carried to a pitch of fanaticiſm unknown to the Italian ſtates, or even in the papal territory. The inquiſition has, in theſe unhappy kingdoms, been inveſted with exorbitant power, and has produced the moſt ruinous effects, having been formerly conducted with a ſpirit totally the reverſe of the mildneſs and charity of chriſtianity. This evil has been recently ſubdued in a conſiderable degree; but one fanatic reign would ſuffice to revive it. A yet greater evil, which has ſprung from fanaticiſm, is the deſtruction of morals; for the monks being extremely numerous, and human paſſions ever the ſame, thoſe aſcetics atone for the want of marriage by the practice of adultery; and the huſbands from dread of the inquiſition are conſtrained to connive at this enormous abuſe. The conſcience is ſeared by the practice of abſolution; and the mind becomes reconciled to the ſtrangeſt of all phenomenons, theoretic piety and practical vice, united in bonds almoſt indiſſoluble.

Eccleſiaſtic Geography.

According to the returns made to the government, the Spaniſh clergy ſtand as follow:

Parochial clergy, called curas - -	16,689
Aſſiſtants, called tenientes curas -	5,771[1]
Sacriſtans or ſextons - - -	10,873
Acolitos, to aſſiſt at the altar -	5,503

[1] Townſend, ii. 213.

Ecclesiastic Geography.

Ordinados de patrimonio, having a patrimony of three reals a day - -	13,244
Ordinados de menores, with inferior eccleſiaſtical orders - - -	10,774
Beneficiados, or canons of cathedrals, and other beneficiaries - -	23,692
Monks - - - -	61,617
Nuns - - - -	32,500
Beatas - - - -	1,130
Syndics, to collect for the mendicants -	4,127
Inquiſitors - - - -	2,705
	188,625

The archbiſhoprics are eight; biſhoprics forty-ſix. The moſt opulent ſee is that of Toledo, which is ſuppoſed to yield annually about 90,000l.[2] The Mozarabic Miſſal, compoſed by St. Iſidore for the Gothic church, after the converſion from Arianiſm to the Catholic faith, continued to be uſed in Spain till the Moors were ſubdued, when the Roman form was introduced.

Government. The government of Spain is well known to be deſpotic, the ſtates or Cortes having hardly been aſſembled ſince the time of Charles V. Dr. Robertſon's hiſtory of that reign may be conſulted for an able view of ancient Spaniſh liberty. If the late monarchs had been as much addicted to maſs as to the chace, it is probable that the inquiſition would have become the chief power in Spain. The deſpotiſm of the monarchy, which might in the hands of an able and intelligent prince be attended with great benefit to the nation, by the inſtantaneous extinction of abuſes, is here balanced by the power of the church, to which even the nobles are ſubmiſſive devotees. It is tempered, as uſual even under oriental deſpotiſm, by many councils, who are reſponſible for any unwiſe or unſucceſsful meaſures; for power is intimately connected with capacity, and when deſpotiſm is arraigned, there is often more cauſe to lament the mere indolence of the deſpot, who, inſtead of exerting his power for the general benefit, commits it

[2] Townſend, i. 311.

to

to others for their peculiar advantage. The chief councils in Spain are: 1. That of diſpatches, called alſo the junto or cabinet council, being compoſed of the king and his miniſters of ſtate. 2. The council of ſtate, in which the king preſides, and of which the archbiſhop of Toledo is always a member. 3. The royal council of finances, called the Hazienda. 4. The ſupreme council of war. 5. The ſupreme council of Caſtile. 6. The ſupreme council of Arragon. 7. The ſupreme council of the inquiſition. 8. The royal council of the orders of knighthood. 9. The royal council of the Indies. 10. That of the Cruſada, compoſed of a commiſſary general, a member of the council of Caſtile, and another of that of Arragon, who arrange the ſubſidies to be granted by the clergy, under the pretext of war againſt the infidels. The grandees of the kingdom, who were formerly ſtyled the Rich Men, have ſeveral privileges; among which an important one in their eyes is that of wearing their hats in the royal preſence, which is however never done except at the nod of the ſovereign. Government.

The laws of Spain are contained in ſeveral ancient codes; and recourſe is alſo had to the civil and canon law. The *Eſcrivanos* are numerous, and inſtead of explaining the codes, often impede the adminiſtration of juſtice. Miſtaken mercy frequently retains criminals in long durance, ſo that when they are executed their offence is forgotten, and the example of puniſhment becomes inefficacious. Laws.

The population of this kingdom is computed at 11,000,000, or 74 to a ſquare mile; while France yields 174, and England 169: nay the kingdom of Naples is computed at 201. This ſtriking defect of population has deſervedly excited attention; and a late intelligent traveller[3] has attempted to aſſign the reaſons, among which may be numbered the expulſion of the Jews after the conqueſt of Granada: that of the Moors by Philip III; the contagious fevers frequent in the ſouthern provinces; the inceſſant inteſtine wars, for ſeven centuries carried on againſt the Moors; the emigrations to America; and the vaſt numbers of unmarried clergy and monks. Several other cauſes are enumerated, among which muſt not be forgotten the want of detached farms; the ſtruggles with the Moors having inſtituted a rooted prejudice which induces Population.

[3] Townſend, ii. 218.

Population. the yeomanry to crowd in towns and villages, as if for mutual defence, inſtead of ſpreading over and enriching the whole face of the country.

In the year 1787 the population of Spain was thus arranged :[4]

Males unmarried - -	2,926,229
Females ditto - -	2,753,224
Married men - -	1,947,165
Married women - -	1,943,496
Widowers - - -	235,778
Widows - - -	462,258
	10,268,150

Excluſive of the clergy, who are above enumerated, the numbers of each rank were thus calculated :[5]

Men ſervants—Criados -	280,092
Day labourers—Jomaleros -	964,571
Peaſants—Labradores -	917,197
Artiſans - - -	270,989
Manufacturers - -	39,750
Merchants - - -	34,339
Knights—Hidalgos -	480,589

" Of theſe laſt four hundred and one thouſand and forty are in the provinces of the Aſturias, Biſcay, Burgos, Galicia, and Leon."

Thus in the moſt uncivilized regions gentlemen, or rather idle men, are always the moſt abundant; where the civilization advances they are ſupplanted by a much more uſeful and reſpectable race, the men of induſtry.

Colonies. After the immortal diſcoveries of Criſtoval Colon, called by writers in Latin Chriſtopher Columbus, the Spaniſh colonies ſoon became numerous and extenſive, in the Weſt Indies, South America, and various iſles in the Pacific Ocean. No nation, except the Engliſh, can in this reſpect rival Spain. But the ſuperior advantages of England, in religious and political freedom, have ſoon replaced the population

[4] Townſend, vol. ii. 213. [5] Ibid. vol. ii. 214.

thus

thus withdrawn; while to Spain the wound has been incurable, as the cauſes of depopulation have always increaſed: and foreigners will never ſeek an aſylum where they are deſpiſed, and loaden with the chains of the inquiſition, or the yet heavier bonds of ignorant pride and prejudice. Colonies.

The Spaniſh armies, inſtead of carrying terror even into the braveſt countries of Europe, as they did two centuries ago, are now neither diſtinguiſhed by number, nor by diſcipline; the royal treaſury being ſo much impoveriſhed, that a large force cannot be maintained. In peace it is computed at about 60,000: but in war the number might be ſwelled to a great amount, by a popular monarch, and an ample revenue. Of late Spain has paid conſiderable attention to her navy, which has however been crippled in the recent warfare with England. The ſhips of the line can ſcarcely now be computed at leſs than fifty. Army. Navy.

The revenue of Spain may be calculated, as is believed, at five millions and a half ſterling money; ſo that each perſon pays ten ſhillings to government for protection. In France, under the old government, each perſon paid near twenty ſhillings; in England at preſent ſixty ſhillings. For the nature of the taxes the tables publiſhed by Mr. Townſend may be conſulted. The expenditure now equals, or exceeds the income; but the national debt is a mere trifle. The beſt judges of the ſubject infer that the colonies yield no direct revenue to Spain, it being conſumed in the expences of the government of thoſe diſtant regions. Revenues.

The political importance and relations of Spain were formerly deeply impreſſed on moſt regions of the globe. But exhauſted by idle wars of ambition or avarice, this fertile kingdom has become almoſt a cypher in European policy. Setting aſide Portugal, which promiſes to be ſpeedily united, the poſition of Spain ſecures her from any invaſion, except on the ſide of France; and it becomes therefore the inſuperable intereſt of this exhauſted ſtate to cultivate amity with her powerful neighbour, which muſt maintain an unavoidable and ſupreme aſcendant, from geographic poſition and relative force. On the other hand the diſ- Political Importance and Relations.

Political Importance, &c.

tance and importance of the Spaniſh colonies render a war with England the greateſt calamity that can befal, as that power, enjoying the unlimited dominion of the ocean, can inflict dreadful wounds on the commerce and colonies of Spain. Such ſeem to be the ſole hinges of Spaniſh polity, though ancient fame, and connections with the royal families of more potent ſtates, ſecure ſome degree of deference to her councils and mediation.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.—Language.—Literature.—Education.—Univerſities.—Cities and Towns.—Edifices.—Roads.—Inland Navigation.—Manufactures and Commerce.

Manners and Customs.

IN ſpeaking of the religion of Spain one of the moſt ſtriking of the national cuſtoms and manners has been already mentioned, namely the common practice of adultery under the maſk of religion. This diſgrace, which is confined to the Catholic ſyſtem, is ſaid to have been tranſplanted from Italy, where love and devotion are as warm as in Spain. But the Italian *cicisbei* are more commonly gentlemen; while in Spain they are monks and eccleſiaſtics; and the vice becomes flagrant beyond conception, as it is practiſed by thoſe very men who ought to exhibit examples of pure morality. It may perhaps be aſſerted that the Roman Catholic ſyſtem in the ſouth of Europe is the only ſuperſtition in the univerſe which has, at any period, neceſſitated the practice of vice; thus confirming the maxim that the corruption of the pureſt and beſt ſyſtem is always the worſt. Were the father of their faith, St. James the apoſtle, again to viſit Spain, he would certainly begin with preaching the chriſtian practice, as if the very idea of chriſtianity had periſhed; and his firſt duty would be to convert the eccleſiaſtics.

Excluſive of this vice, the Spaniſh character is highly reſpectable, for integrity and a long train of virtues. Conſcious of an upright and noble mind, the reſpect which a Spaniard would pay to thoſe qualities in others, is often centered in himſelf, as he is intimately ſenſible that he poſſeſſes them. This ſelf-reſpect is nearly allied to pride; but it is the pride of virtue, which certainly ought not to humble itſelf before vice and folly. From the ſame principle ariſes an exceſs of ceremony,

at

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at leaſt as laudable as the oppoſite extreme of nudity and impertinence, to which ſome modern fanatic philoſophers would reduce human nature, or in other words brutalize the ſpecies. Temperance is a virtue which the Spaniard ſhares with other ſouthern nations, for wine is ſo inflammatory in regions expoſed to the heat of the ſun, that inſtead of an agreeable warmth, and a flow of ideas, it would produce fever, miſery, and madneſs. In theſe countries the body is ſo much exhauſted by the influence of heat, that the ſieſta, or ſhort ſleep in the middle of the day, becomes a neceſſary reſource of nature, and is by habit continued even in the winter.

The chief defect in the character of the Spaniſh nobility and gentry is, their averſion to agriculture and commerce. Inſtead of thoſe beautiful villas, and opulent farms, which enrich the whole extent of England, the Spaniſh architecture is almoſt confined to the capital, and a few other cities and towns. The metropolis is however their chief element, by traditionary cuſtom, which aroſe like others from neceſſary cauſes; as in former turbulent periods their preſence at court was conſidered as the ſole pledge they could give of their duty and affection to the monarch. Now that long authority, and multiplied diſtinctions, have elevated royal families far above any competition with the great nobles, it would be patriotic in the ſovereign to order them to build detached villas, and to eſtabliſh their chief reſidence in them; a maxim of prudence not unknown to James the firſt of England, who uſed to adviſe the great men not to haunt the court, but their own eſtates, where their money might be ſpent among the tenants who ſupported their opulence; adding a ſimilitude that a ſhip in a fleet at ſea appeared nothing, but in a river became an object of great importance. Till this event take place, and till farm houſes are ſcattered over the kingdom, it will be abſolutely impoſſible for agriculture to flouriſh in Spain. To import German colonies, as has been done in the Sierra Morena, is to begin at the wrong end, and to ſuppoſe that the poor can ſet an example to the rich. If, by any wiſe reverſion of prejudices, idleneſs, in whatever claſs of men, could be branded as infamous, and the diſgrace extended to opulent vagabonds, we might then be led to hope that

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that ſome hundred thouſand Hidalgos, or ſons of ſomething, ſhould become the more laudable ſons of their own works, and contribute by trade and agriculture to promote at once their own fortunes, and the public proſperity. An intimate connexion, and intermixture, of all ranks of men, and their mutual reſpect for each other, form a liberal ſource of the wealth and power of the Britiſh dominions; but Spain perhaps deſpiſes the example of heretics.

Since the acceſſion of the houſe of Bourbon, a ſlight ſhade of French manners has been blended with the Spaniſh gravity. But faſhions have here little ſway; and the prohibition of ſlouched hats and long cloaks led to a ſerious inſurrection. The prohibition was however continued, and is ſalutary, as this complete diſguiſe occaſioned many nauſeous cuſtoms, and even frequent aſſaſſinations. All viſits are underſtood to be paid to the miſtreſs of the houſe, the extreme gallantry of the men having reduced them to cyphers. When the Spaniſh ladies go to maſs, which is almoſt the ſole occaſion of their being ſeen abroad, they attire themſelves in a black ſilk petticoat, and a kind of mantle which alſo ſerves as a veil, and is often arranged with ſingular eaſe and grace. The houſes of the great are not diſpoſed with the moſt elegant and commodious architecture; but are ſo large that Mr. Townſend aſſigns 400 bedchambers to the Duke of Alba's palace, where all the ſuperannuated ſervants, with their wives and children, are lodged; their wages being computed at 10001. ſterling a month. The cottages and inns are, on the contrary, miſerable: but the dreſs and manners of the lower claſſes vary much in different provinces; and for a living picture of them the reader may conſult the immortal work of Cervantes.

The amuſements of people of rank chiefly conſiſt in dancing and cards, and the theatre is little frequented, perhaps becauſe the plays and muſic do not correſpond in excellence with the national refinement. The combats with bulls in the amphitheatres have juſtly been regarded as a ſtriking feature of Spaniſh and Portugueſe manners. That ſuch ſpectacles tend to familiariſe the people with bloodſhed, ſeems an idle theory, unwarranted by facts. Modern Italy has no gladiators, but numerous aſſaſſins; ancient Rome had ſcarcely one aſſaſſin, but whole

Manners and Customs.

armies of gladiators. Hardly to the moſt weak and diſeaſed fancy can theatrical repreſentation preſent any idea connected with real life; and it ſeems of no moment to the national character whether bulls be killed by butchers or by champions. A French theoriſt infers, from the bloodſhed in Engliſh tragedies, that the people are ſanguinary; whereas the very reverſe is the truth, and an Engliſh mob may deſtroy houſes, but never ſheds blood. Contraſt this with the innocent tragedies of the French, and the ſanguinary ſpirit of the populace, exhibited at ſuch diſtant periods, and from ſuch oppoſite cauſes. The chief actors in the bull feaſts are the picadors, who are mounted on horſeback and armed with lances, and the chulos on foot, who relieve and ſuſtain the former; but the chief perſonage is the matador, who enters amidſt the profound ſilence of the whole aſſembly, and coolly diſpatches the furious animal by a blow where the ſpinal marrow joins the head. The death is bloodleſs and inſtantaneous, and deſerves imitation, as humanity would wiſh to ſave pain to the animals ſlaughtered for food. Sometimes the bull is pierced in various parts with lances, to which ſquibs are faſtened, which being ſet on fire, the maddened animal ſtands pawing the ground, while he draws in and exhales volumes of ſmoke: ſometimes an American is introduced, who, after the manner of hunting the wild bull in his own country, throws a rope round the horns, and entangles the quadruped as in a net, then kills him with perfect ſafety.

Language.

The Spaniſh language is one of the three great ſouthern dialects which ſpring from the Roman; but many of the words become difficult to the French or Italian ſtudent, becauſe they are derived from the Arabic, uſed by the Moors, who for ſeven centuries held dominion in this country. The ſpeech is grave, ſonorous, and of exquiſite melody, containing much of the ſlow and formal manner of the Orientals, who ſeem ſenſible that the power of ſpeech is a privilege.

Literature.

The literature of Spain is highly reſpectable, though little known to the other countries of Europe ſince the decline of Spaniſh power. The Bibliotheca Hiſpanica of Antonio will completely ſatisfy the curious reader on this ſubject. Among the fathers of literature in this country muſt be named Iſidore of Seville, many of whoſe works are extant, and inferior in merit to few of that epoch. Lives of ſaints,

LITERATURE.

and chronicles, are alſo found, as uſual, among the earlieſt productions; and ſucceſſive writers may be traced to the eleventh century, when they become numerous; but before briefly mentioning ſome Spaniſh authors poſterior to that period, it will be proper to reconect that Arabian learning flouriſhed under the Chalifs of Cordova, and produced many illuſtrious names well known to the Oriental ſcholar, as Aben Roe, or Averroes, Aben Zoar, Rhazes, &c.; nor muſt it be forgotten that Aben Nazan wrote a book on the learning and authors of Spain. On this ſubject the inquiſitive are referred to the work of Caſiri. Many Jewiſh authors alſo flouriſhed in this country.

In the eleventh century, as already mentioned, the Spaniſh authors began to increaſe in number, and the native language begins to appear. This was the epoch of the famous *Cid*, an Arabic term implying *lord*, Roderic Didac de Bivar, whoſe illuſtrious actions againſt the Moors were celebrated in contemporary ſongs, and by a long poem, written in the ſucceeding century; which alſo boaſts of many chronicles and much ſacred biography. After the thirteenth century, it would be idle to attempt to enumerate the crowd of Spaniſh authors, among which are Alphonſo the wiſe, who wrote the *Libro del Teſoro*, a treatiſe on the three parts of philoſophy, rational, phyſical, and moral; and at whoſe command were compiled the famous Alphonſine tables of aſtronomy. Raymond Lully is ſaid to have written no leſs than 319 books: they are full of metaphyſical froth, and one book of real knowledge would outweigh the whole. In the fifteenth century appeared Juan de Mena, a poet of ſurprizing powers, and who unites the merits of Dante and Petrarca. Since the year 1500 ſcarcely can a department of literature be mentioned, in which the Spaniards have not excelled; if we except natural philoſophy, the progreſs of which has been checked by the inquiſition. It would be unneceſſary to repeat the well known names of Cervantes, Quevedo, Lopez de Vega, or other authors whoſe works are known to all Europe. The hiſtory of Mexico by De Solis has been celebrated as a compoſition; but in facts it is defective and erroneous. The name of Bayer in learning, and of Feyjoo in general knowledge, have recently attracted deſerved reſpect:

Literature. nor has the line of royal authors failed, an elegant tranſlation of Salluſt having been publiſhed by the heir apparent to the monarchy.

Education. The rudiments of education in this country being chiefly imparted by the monks, it cannot be expected that uſeful knowledge ſhould be common. But the recent accounts of Spain have thrown ſo little light on this topic, that it can only be generally underſtood by compariſon with other catholic countries. It is however to be regretted that intelligent travellers have not lent more attention to this ſubject, more important in its conſequences than any form of government: nor would it be unuſeful to know that practiſed in Spain, in particular, as the reverſe muſt be excellent.

Univerſities. The univerſities, or rather academies, in Spain are computed at upwards of twenty; of which the moſt noted is that of Salamanca, founded in the year 1200 by Alphonſo IX king of Leon, and afterwards regulated by Alphonſo the wiſe. The ſtudents have, at former periods, been computed at 16,000, ſufficient to darken the face of the earth; for the reign of Ariſtotle in logic and natural philoſophy, and of Thomas Aquinas in theology, continues unviolated, ſo that a ſtudent of the year 1800 may aſpire to as much ignorance as one of the year 1300; and the progeny of dunces proceeds without end. In 1785 the number of ſtudents was computed at 1909.[1] The ſame antiquated teachers are received with implicit faith in the other univerſities, ſo that a more liberal education at ſchool muſt here be obliterated.

Cities and Towns. As a proper introduction to a brief account of the chief cities and towns of Spain, the following eſtimate is ſubjoined from an accurate author:[2]

Cities—Ciudades - - -	145
Borough towns—Villas -	4,572
Villages—Lugones - - -	12,732
Hamlets—Aldeas - - -	1,058
Granjas—Farm houſes - - -	815
Cotos redondos—Parks or waſtes incloſed	611
Depopulated towns - - -	1,511
Pariſhes - - - -	18,972
Convents - - - -	8,932

[1] Townſend, ii. 79. [2] Ibid. ii. 215.

Madrid,

Madrid, the royal reſidence, while Seville is eſteemed the capital of Spain, is of recent fame. Philip II firſt eſtabliſhed his court at Madrid; and the nobility, in conſequence, erecting numerous palaces, this formerly obſcure town began to aſſume an air of grandeur. The central poſition ſeems the chief advantage, for the environs can boaſt of little beauty or variety. The river Mançenares is in winter a torrent, but dry in ſummer: over it is an elegant bridge, which occaſioned a ſarcaſtic remark that the bridge ſhould be ſold in order to purchaſe water. This metropolis contains 13 pariſhes, 7398 houſes, 32,745 families, amounting to a population of 147,543.[3] The convents are 66; and there are fifteen gates of granite, many of which are elegant. The chief is the Puerta de Alcala, of three arches, the central being 70 feet in height. The churches and monaſteries contain many noble paintings, and the royal palaces diſplay conſiderable magnificence. The new palace preſents four fronts, of 470 feet in length and 100 in height, enriched with numerous pillars and pilaſters. The foundation was laid in 1737, three years after the ancient palace had fallen a ſacrifice to the flames. The audience chamber is deſervedly admired, being a double cube of 90 feet, hung with crimſon velvet, and adorned with a ſumptuous canopy and painted cieling. The prado is a ſpacious courſe, in which the great diſplay their elegant equipages. At Madrid are the royal manufactures of china, ſaltpetre, &c.; but the city has little trade, and chiefly proſpers by the preſence of the court, and confluence of the great, whoſe rents are remitted to the capital to the great injury of the kingdom at large.

Cities and Towns. Madrid.

Next in real importance to Madrid are the principal ſea-ports, which are enriched by commerce; while the cities in the interior decline from the want of agriculture and inland navigation. The commerce of America formerly centered at Seville, but was afterwards removed to Cadiz, a city which is ſuppoſed to contain about 70,000 ſouls.[4] The two cathedrals are grand; and there is an hoſpital which will contain 6000 patients. The hoſpicio, or general workhouſe, is an intereſting eſtabliſhment, containing more than 800 poor of all ages, who are here trained to induſtry.

Cadiz.

[3] Townſend, i. 253.

[4] Ibid. ii. 374.

Malaga

Cities and Towns.

Malaga.

Malaga is eſteemed the ſecond port in the kingdom, and is alſo celebrated for excellent wines, the rich Malaga, the Mountain, ſo called from the hills which produce the grape, and the Tent or Tinto, ſo ſtyled from its deep red tinge. Malaga ſtands in a valley ſurrounded with hills, the houſes high, the ſtreets narrow and dirty. Inhabitants about 40,000: the cathedral begun in 1528 is not yet finiſhed; the convents are 25, but of ſmall account.[5] The city ſwarms with thieves and mendicants. The municipal government reſts with a corregidor or mayor, appointed by the crown; but the regidors or aldermen are hereditary. There are alſo two ſyndicos, or tribunes to protect the people.

Barcelona.

Towards the S. E. is the third moſt conſiderable port of Spain, that of Barcelona.[6] The ſtreets are narrow and crooked; the churches rather rich than beautiful. The hoſpicio contains about 1400 induſtrious poor, and there is a houſe of correction which ſometimes includes even women of rank, if guilty of drunkenneſs or other low vices. The inhabitants of Barcelona are computed at more than 100,000; and induſtry prevails here, being a native virtue of the Catalonians: chief manufactures, ſilk, cotton, and wool, excellent fire-arms and cutlery; the chief imports, corn, fiſh, and woollen goods; exports wine, brandy, cloth, and leather. During peace it is ſuppoſed that 1000 veſſels enter this port; of which half are Spaniſh, 120 French, 100 Engliſh, and 60 Danes. Barcelona ſtands in a plain open to the S. E. but protected by hills on the north and weſt, being a healthy and delightful reſidence; but the eaſt wind commonly brings fog, and produces ſuch irritability that the beſt friends at ſuch periods rather wiſh to avoid each other.

Corunna.

Along the northern ſhores of Spain there are few harbours of any note. The moſt remarkable is that of Corunna, by our mariners ſtyled the Groyn. The harbour is large and ſafe; the town of a circular form; but the poverty of the ſurrounding province of Galicia affords few reſources for trade, and many of the natives are diſperſed over Spain and even Portugal, as day labourers and ſervants, being univerſally eſteemed for their probity and fidelity.

[5] Townſend, iii. 10. &c. [6] Ib. i. 106.

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The chief inland cities of Spain ſhall be briefly reviewed, beginning from the north. Oviedo and Leon are now inconſiderable, and only boaſt their ancient fame, as ſucceſſive capitals of Spaniſh royalty, when ſtruggling againſt the Moors. The cathedral at Leon is admired for its elegant lightneſs. Cities and Towns.

Pampelona, the capital of Navarre, is more remarkable for the learning of ſome of its prelates, than for any other circumſtance. The inhabitants are about 5000. Burgos, the ſee of an archbiſhop, retains veſtiges of former opulence. Valladolid, in the ſame province of old Caſtille, contains ſome woollen manufactures, and many goldſmiths and jewellers. Pampelona.

Saragoſſa, the chief town of Arragon, is the ancient Cæſarea Auguſta, and diſplays many rich churches and convents.[7] The univerſity contains about 2000 ſtudents. There are no manufactures, though it is to be hoped that theſe will be encouraged by the great canal of Arragon, projected, like other Spaniſh works, on a moſt magnificent ſcale, and of the length of about 250 Engliſh miles, from the mouth of the Ebro to St. Ander in the weſtern extremity of Biſcay, thus uniting the Mediterranean with the Atlantic. Saragoſſa.

On the ſouth of Madrid firſt occurs Toledo, a city of conſiderable fame, and remarkable ſituation, for the river Tajo, or Tagus, paſſing between two mountains of granite, almoſt ſurrounds one of them, on which is placed the city, riſing like a cone.[8] Toledo was formerly the royal reſidence; and contains a grand palace, built in the reign of Charles V. The manufacture of arms was long famous, and has been recently revived: the archbiſhoprick is computed at 90,000l. annually; but the inhabitants, once calculated at 200,000, are now reduced to 25,000. Toledo.

Badajos, in Eſtramadura, is remarkable for its poſition on the very confines of Portugal, and is the ſee of a biſhoprick. In the ſouthern provinces appears Seville, famous till the year 1720, as the mart of American trade. The inhabitants are computed at 80,000; and the churches and convents are opulent and beautiful. The chief manufactures ſilk, and recently ſnuffs, a royal monopoly, not only the com- Badajos. Seville

[7] Townſend, i. 205. [8] Ibid. i. 303.

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Cities and Towns.

mon Spaniſh, but rappee, as it was found that the latter was ſmuggled from France. The tobacco employs 220 manufacturers, who are ſtrictly examined and guarded. Seville is eſteemed the chief *city* of Spain, Madrid being only a *town* diſtinguiſhed by the royal reſidence.[9]

Murcia.

Murcia, the capital of the province ſo called, is of conſiderable account, and ſituated in one of the moſt beautiful vales in Spain.[10] The inhabitants are computed at about 80,000, more probably 60,000. There is a beautiful bridge over the Segura; and the cathedral is lofty, but cannot boaſt of internal opulence or beauty.

Granada.

Granada has been long celebrated as the paradiſe of Spain, though the ſouthern provinces be in general unhealthy. This city ſtands in a vale bounded by hills, beyond which to the ſouth is the Sierra Nevada, ſo called becauſe the mountains are covered with perpetual ſnow. The inhabitants ſuppoſed to be 80,000; the Mooriſh palace here has been already deſcribed; and adjoining is a palace erected by Charles V. The cathedral and convents contain excellent pictures by Spaniſh maſters. The municipal government is in a corregidor, and twenty-four regidors. There are beautiful public walks; and the environs are delightful and well cultivated.*

Edifices.

The moſt remarkable edifices of Spain are the cathedrals of the ſeveral ſees, and the churches belonging to opulent convents. The houſes of the nobility are confined, with few exceptions, to the capital and other cities, inſtead of adorning the country at large as in England. This circumſtance however tends, in Spain and Italy, to impreſs a ſtranger with erroneous ideas concerning the abundance of works of art in theſe countries; while the ſeeming opulence ariſes in great part

[9] Dillon, 432. But the population of Madrid and Barcelona is far ſuperior.

[10] Townſend, iii. 150. [11] Ibid, iii. 55.

* Gibraltar, ſo called from a Mooriſh or Arabic denomination, ſignifying the mountain of Tarik who conducted the Moors into Spain, ſtands on the weſt ſide of a rocky mountain, called Calpe by the ancients: and to the weſt of the town is a large bay. In 1462 it was taken from the Moors; and in 1704 fell into the hands of the Engliſh. The ſiege during the American war is of freſh and celebrated memory. The inhabitants of the town are about 5000; and the garriſon generally amounts to as many. The number and ſtrength of the military works, and the vaſt galleries opened in the calcareous rock, excite admiration. There is a ſtalactitic cave, that of St. Michael; and bones are found in the rock, which ſeem to have fallen into the cavities, where they are enveloped in the exuding petrifaction. The fortreſs, in the opinion of moſt military men, is abſolutely impregnable.

from

from their being concentrated in particular ſpots, inſtead of being diffuſed in diſtant villas. The palace and monaſtery of the Eſcurial have been deſcribed at great length by many travellers. It is ſeated in a deep receſs, at the foot of high mountains; and was built by that bigot Philip II in the ſtrange form of a gridiron, the inſtrument of the martyrdom of St. Lawrence, upon whoſe anniverſary the Spaniards gained the victory of St. Quintin. The convent is 740 feet by 580; and the palace forms the handle of this imaginary gridiron. The paintings are excellent and numerous; and the vault containing the royal tombs is grand and impreſſive. But the palaces of Aranjuez and St. Ildefonſo are greater favorites with the court. The gardens of the former, watered by the Tajo, are laid out in a juſt and natural taſte. St. Ildefonſo is a ſummer reſidence, expoſed to the north; and being built on a rocky ſoil is computed to have coſt ſix millions and a half ſterling. The Pardo, another palace, ſtands in the midſt of a large foreſt. Edifices.

Colonies proved the ruin of Athens; and the attention paid to foreign colonies is always detrimental to the parent ſtate. This political axiom may moſt juſtly be applied to Spain, which has in fact been exhauſted and impoveriſhed by grand and rich colonies. Hence the natural advantages of the country have been ſacrificed to commercial ſpeculations; and the miſer ſtarves amidſt accumulated wealth. The inland navigations of Spain, though commenced upon united principles of grandeur and utility, had been permitted to languiſh through the want of reſources, and the ſlow meaſures of the court, rather than by any indolence of the ſuperintendants and labourers. The great canal of Arragon ſeems to remain in a ſtate of imperfection, though we are told that two branches are completed from the Ebro towards Navarre, and have been attended with the moſt beneficial conſequences.[13] One of theſe canals is conducted over the valley of Riojalon, by an aqueduct bridge of 710 fathom in length, but only 17 feet thick at the baſe. Another canal was to begin at Segovia, or about 40 miles N. of Madrid, thence to extend to the bay of Biſcay. This is termed the canal of Caſtille. The canal of Guadarama was conducted with more ſpirit, and is probably completed. It was to open near the Eſcurial, and Inland Navigation.

[13] Phillips, 65.

Inland Navigation.

proceed ſouth to the Tajo or Tagus; and another was projected from the capital to the ſame river. A canal was begun in Murcia, but ſo ill projected that it was found to be impracticable.

Manufactures and Commerce.

The manufactures of Spain are conſiderably checked by the royal monopolies, which extend to the following articles:[14]

Broad cloth, at Guadalajara and Brihuega.
China, at the palace of the Buen Retiro.
Cards, at Madrid and Malaga.
Glaſs, at S. Ildefonſo.
Paper, in Segovia.
Pottery, at Talavera.
Saltpetre, at Madrid and various other places.
Stockings, at Valdemoro.
Swords, at Toledo.
Tapeſtry, at Madrid.
Tiſſue, at Talavara.

The king has alſo the monopoly of brandy, gunpowder, lead, quickſilver, ſealing wax, ſalt, ſulphur, and tobacco. Moſt of the royal manufactures may be regarded as monopolies; no private capital being able to vie with the treaſury. It is poſſible that the firſt intentions were laudable; to ſet an example to the nobility of the advantages of induſtry; but in this reſpect they have failed, and the conſequences have added to the national diſtreſs. Many manufactures are however conducted in Spain with great ſpirit and aſſiduity; and any failure muſt not be imputed ſo much to the indolence of the people, as to the prejudices of the great, and the inquiſitorial power of the eccleſiaſtics, which cramps genius and invention of all kinds, and conſtrains the mind to the ſame perpetual circle. Spain ſupplies wines, oil, fruits, ſilk, leather, broad cloth, and other articles to many European countries; but her chief trade is with her own colonies in America. The ſoil of Spain is exuberant in the production of ſaltpetre; and the barilla, uſed in making glaſs, has been long celebrated. This ſpecies of potaſh is procured by burning ſeveral vegetables found on the ſhore of the Mediterranean near Carthagena.[15] The region which produces

[14] Townſend, ii. 240.

[15] Ibid, iii. 131.

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MANUFACTURES AND COMMERCE.

the greateſt abundance extends about ſixty leagues in length and eight in breadth. Spain is ſuppoſed to gain little or nothing by her intercourſe with her colonies, for the gold and ſilver imported flow like water from the parent rock into the vales, naturally proceeding towards countries where labour is cheaper, and which ſupply Spain with neceſſaries in return for the precious metals.

In the year 1784 the exports from Spain to America were thus computed in pounds ſterling:[16]

	Spaniſh Produce.	Foreign Produce.	Total Produce.
Cadiz - -	1,438,912	2,182,531	3,621,443
Malaga -	196,379	14,301	210,680
Seville - -	62,713	30,543	93,256
Barcelona -	122,631	21,240	143,871
Coruña -	64,575	39,962	104,537
Santander -	36,715	90,173	126,888
Tortoſa -	7,669	289	7,958
Canaries -	24,974	- -	24,974
Gijon - -	4,281	10,190	14,471
	£.1,958,849	£.2,389,229	£4,348,078

The duties were computed at 170,800l.

The imports from America to Spain were, at the ſame time, thus eſtimated in the ſame money:

	In Money and Jewels.	In Merchandiſe.
Cadiz -	8,297,164	2,990,757
Malaga -	- -	18,605
Barcelona -	102,140	91,233
Corunna -	741,283	90,001
Santander	40,843	100,974
Canaries -	109,807	52,366
	£.9,291,237	£.3,343,936

The whole imports therefore exceeded twelve millions and a half: the duty amounted to more than half a million.

[16] Townſend, ii. 415.

CHAPTER IV.

Natural Geography.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

Climate and Seaſons.

THE climate of Spain has been deſervedly praiſed, as equal if not ſuperior to that of any country in Europe; but in the ſouthern provinces the heat is inſalubrious, and malignant fevers ſometimes ſweep off great numbers. This diſaſter probably originates from the neglected ſtate of the country, from ſtagnant marſhes which might, if properly drained, ſupply running ſtreams and verdant meadows. The S. E. wind from Africa, called Solano, has ſuch inflammatory effects that it is ſaid more murders are then committed during three days, than throughout the reſt of the year.[1] The chains of mountains which pervade Spain at different intervals, from E. to W., ſeem to temper the climate, and ſupply cooling breezes. In the South the ſea breeze, beginning about nine in the morning and continuing till five in the evening, agreeably diverſifies the warmth of the ſummer; and in the northern provinces the ſeverity of winter is allayed by the proximity of the ocean, which generally ſupplies gales rather humid than froſty.

Face of the Country.

The face of the country is in moſt ſeaſons delightful, abounding with excellent and fragrant paſturage, vineyards, and groves of orange trees; and the hills clothed with wild thyme and other odorous plants. The rivers and ſtreams are numerous; and the chains of mountains afford a grand variety to the proſpect.

Soil and Agriculture.

The ſoil is generally light, and repoſes on beds of gypſum or plaiſter of Paris, itſelf an excellent manure. "The common courſe of

[1] Dillon, 308. Townſend, &c.

huſbandry

husbandry[2] about Barcelona begins with wheat; which being ripe in June is immediately succeeded by Indian corn, hemp, millet, cabbage, kidney beans, or lettuce. The second year these same crops succeed each other as before. The next year they take barley, beans, or vetches; which coming off the ground before Midsummer, are followed, as in the former years, by other crops, only changing them according to the season, so as to have on the same spot the greatest possible variety." Wheat produces ten for one; but in rainy seasons fifteen. The same intelligent author informs us that near Carthagena the course is wheat, barley, and fallow.[3] For wheat they plough thrice, and sow from the middle of November to the beginning of December; in July they reap from ten to one hundred for one, as the season happens to be humid. The Huerta, or rich vale of Alicant, yields a perpetual succession of crops. Barley is sown in September, reaped in April; succeeded by maize, reaped in September; and by a mixed crop of esculents which follow. Wheat is sown in November, and reaped in June; flax in September, pulled in May. In the vale of Valencia wheat yields from twenty to forty; barley from eighteen to twenty-four; oats from twenty to thirty; maize one hundred; rice forty. In the more southern provinces the land is almost equally fertile: and the sugar-cane is cultivated with success near Granada. The Spanish plough is generally light, and is drawn by oxen with the yoke over the horns; the most proper and natural mode, as the chief strength of the animal centres in the head. Agriculture is greatly impeded in Spain by the superior attention paid to the large flocks of sheep, which are authorised by a special code, the Mesta, to travel from one province to another, as the season presents pasturage in the vales, or on the mountains. The Merino sheep, or flocks thus privileged, are computed at 5,000,000; and one nobleman has sometimes 40,000. The fleece is esteemed double in value to that of other sheep: but the checks given to agriculture by such privileges, unknown to all other countries, are incalculable.

Soil and Agriculture.

Among the chief rivers of Spain may be named the Ebro, which anciently conferred an appellation on the country. This noble stream

Rivers. Ebro.

[2] Townf. i. 179. [3] Ibid. iii. 134.

rises

Rivers. riſes in the mountains of Aſturias, in a ſmall vale E. of Reinoſa, and purſuing its courſe to the S. E. enters the Mediterranean ſea, after having run about 380 G. miles. The other rivers running to the eaſt are of leſs importance, as the Guadalavir, the Xucar, and the Segura, which enlivens the fertile vales of Murcia. Towards the weſt occurs

Guadalquivir. the Guadalquivir, the ancient Bætis, which gave name to the province. This river originates in the Sierra Morena, and flows into the gulph of Cadiz, after a courſe of near 300 G. miles. The Guadiana riſes in the N. ſide of the Sierra Morena, according to Spaniſh authors, though the chief ſources ſeem rather to be in the mountains of Toledo: it purſues a part of its courſe through Portugal, and falls into the gulph of Cadiz, after a circuit nearly equal to that of the Ebro. But the chief

Tajo. river of Spain and Portugal is the Tajo, or Tagus, which riſes on the weſt of Arragon, near Albarracin, in a ſpring called Abrega,* and holds

Douro. a courſe of about 450 G. miles. The Douro ſprings near the ruins of ancient Numantia; and its courſe may be computed at 350 G. miles.

Minho. The Minho riſes in the mountains of Galicia; and is more remarkable as forming a part of the boundary between that province and Portugal, than for the length of its circuit, which does not exceed 160 G. miles. Many other ſtreams pervade the northern provinces, but not of ſufficient importance to be here commemorated.

Lakes. The lakes of Spain are ſo few, and of ſuch ſmall extent, that they ſcarcely deſerve notice. There is a ſingular ſeries of ſmall lakes in the S. E. of New Caſtille, to which ſome aſſign the ſource of the Guadiana.

Mountains. The Spaniſh mountains are arranged by nature in ſeveral diſtinct chains. The moſt northern is regarded as a continuation of the Pyrenees, paſſing on the S. of Biſcay and the Aſturias into Galicia. This chain is diſtinguiſhed by different names, as the mountains of Biſcay, the Sierra of Aſturias, and the mountains of Mondonedo in Galicia. It is alſo known by the names of the mountains of Santiliana, of Vindo, and of the mountains of Oca.† If we except the Alps, Pyrenees, Apennines, and other chains in countries civilized at

* Near the Sierra Blanca, eſteemed the higheſt ſituation in Spain, as the Guadalaviar runs into the Mediterranean. Dillon, 208.

† Journal des Mines, An v. 391.

an

an early period, and accuſtomed to general and ſcientific views, there is ſcarcely a range of mountains diſtinguiſhed by an uniform term, though ſo neceſſary in geographic elucidation. It muſt alſo be here obſerved that the term *Sierra*, peculiar to Spain, implies a chain of mountains whoſe ſucceſſive peaks preſent the reſemblance of a *ſaw*. The gypſeous and argillaceous mountains of this country rarely exhibiting any ſupreme elevation, like thoſe in the granitic chains, naturally ſuggeſted this ſingular appellation. Mountains.

The ſecond chain of Spaniſh mountains extends from near Soria on the N. E., and purſues a S. W. direction towards Portugal. This chain is called that of Urbia, or Guadarama; and alſo the *Montes Carpentanos*.* The third is that of Toledo, running nearly parallel with the laſt. Theſe two central chains ſeem to contain great quantities of granite.

Next towards the S. is the Sierra Morena, or Brown Mountains; which are followed by the moſt ſouthern ridge, that of the Sierra Nevada.

On the eaſt there is a conſiderable chain, which connects the two central ridges, and advances towards the Mediterranean in the north of Valencia. There are alſo ſeveral conſiderable ranges of hills in this part of the kingdom, generally running from N. to S.

A remarkable ſolitary mountain, not far from Barcelona, muſt not be omitted. At a diſtance Montſerrat appears like a ſugar-loaf; but on a nearer approach ſeems jagged like a ſaw, with pyramidal rocks: it is compoſed of farcilite or pudding ſtone, formed of limeſtone gravel united by calcareous cement; and is of ſuch a height that from its ſummit may be diſcerned the iſlands of Majorca and Minorca, at the diſtance of 50 leagues.[5] The circumjacent region is of argillaceous ſchiſtus, with clay and ſand. As the Pyrenees are chiefly calcareous, the pebbles, even to a remote diſtance, are of the ſame nature; and this hill ſeems to have originated in ſome unaccountable manner, from materials ſwept down by primeval waters from the Pyrenees; as thoſe near Oban in Scotland, from the granitic chain in that country: the only difference being that of the materials, which compoſe the Montſerrat.

* Dillon p. 115, ſays the mountains, dividing the two Caſtilles, are called thoſe of Guadarama.

[5] Townſ. i. 189.

farcilite,

Mountains. farcilite, in the one inſtance calcareous, and in the other ſiliceous. Not far from Montſerrat, near the village of Cardona, is a hill three miles in circumference, which is one maſs of rock ſalt; uſed in the dry climate of Spain for vaſes, ſnuff boxes, and trinkets, like our Derbyſhire ſpar.

Pyrenees. The Spaniſh ſide of the Pyrenees has not been accurately examined; and as the French mineralogiſts have amply illuſtrated the part belonging to France, an account of theſe mountains has been given in the deſcription of that country. In the want of a general and ſcientific account of the Spaniſh mountains, a few notices muſt ſuffice, extracted from different parts of Mr. Townſend's travels. According to that intelligent obſerver the northern ſide of the Pyrenees is chiefly calcareous, ſurmounted with argillaceous ſchiſtus; but the ſouthern is granite, and of courſe barren.[6] The hills to the ſouth of Gerona are alſo granitic. The higheſt ridge in Spain, near Daroca, whence originate the Tajo and the Ebro, ſeems compoſed of argillaceous ſchiſtus, and freeſtone, probably reſting on granite.[7] Near Anchuela the mountains are limeſtone with ſhells; and ſometimes contain beds of red gypſum with cryſtals of the ſame colour. In general gypſum is as abundant in Spain, as chalk is in England; and the gypſum produces cryſtals of ſea ſalt and Epſom ſalt, and abundance of nitre. The mountains on the north of Madrid, forming part of the central chain, are granite.[8] Thoſe to the north of Leon chiefly marble, or limeſtone, on a baſis of argillaceous ſchiſtus, riſing in bold and rugged rocks, which afforded a barrier to the remains of Spaniſh liberty. In returning towards the S. the ſoil of La Mancha is ſandy, the rock gypſum. The higher regions of the Sierra Morena are granite; the lower argillaceous ſchiſtus, with gypſum and limeſtone. The granite is of two kinds, the red and the white.[9] Near Cordova the higheſt hills are covered with rounded maſſes of granite, grit, and limeſtone. Near Malaga are branches of the Sierra Nevada, or ſnowy chain, an appellation which might alſo be extended to the central range between Old and New Caſtille, which, according to Mr. Townſend, might at ſome times be viſible at the diſtance of 100 miles: theſe branches preſent

[6] Townſ. i. 89. [7] i. 219. [8] i. 356. ii. 107. [9] ii. 290. 297.

limeſtone and marble, ſurmounted by argillaceous ſchiſtus. Near Alhama S. E. of the city of Granada, are found rocks, which on a baſis of ſhingle or round gravel, preſent ſandſtone with ſhells, ſurmounted with farcilite; but in general the rocks are gypſeous, with ſtrata of the ſame ſubſtance cryſtallized. Mr. Townſend[10] ſuppoſes that the power of the ſun contributes to impregnate chalk with vitriolic acid, thus forming gypſum. The S. E. part of Spain ſeems equally calcareous, and the cathedral of Murcia is built with piſolite, a ſort of freeſtone reſembling the roe of fiſh. But near Cape de Gata the hills muſt be granitic, as a kind of aventurine brought from that diſtrict demonſtrates. Mountains.

Spain contains many foreſts, partly ariſing from the want of cultivation, partly reſerved for the royal pleaſures of the chace; as that of the Pardo, which extends near thirty miles in length; ſome of the foreſts are haunted by ſmugglers, and banditti, who raiſe contributions from the unwary travellers, and even murders are not unfrequent. Foreſts.

Although the great promontory weſt of the Pyrennean mountains is divided, by its political intereſts, into the independent governments of Spain and Portugal, yet the diſtribution of the different kinds of ſoil, and natural products, is ſo little conformable to the territorial diviſion, that an account of the botany of either country muſt neceſſarily include the great outlines of the other: it will therefore ſave much repetition to unite the two kingdoms in a general ſketch of the botany of the whole promontory. Botany.

Spain, including by this term the whole country weſt of the Pyrennees, may be divided according to its botany into the ſea-ſhore; the high mountains; the lower ones; the arable lands; the grazing tracts and marſhes along the rivers; and the vicinity of Liſbon and Oporto.

The ſea-ſhore of Spain preſents fewer peculiarities than the interior; reſembling for the moſt part in its vegetable productions the northern coaſts of the Mediterranean: the flat ſandy tracts are occupied by the pancratium maritimum, *ſea daffodil*; feſtuca maritima, and elymus caput meduſæ, two coarſe kinds of graſs; ſalicornia fruticoſa, *ſhrubby glaſswort*, and ſalſola ſoda and ſativa; of the laſt of theſe there are ex-

[10] iii. 49. 52.

Botany. tenſive plantations in the neighbourhood of Alicant and Barcelona, for the purpoſe of procuring from its aſhes the Spaniſh barilla, an alkaline ſalt of conſiderable purity, of which ſome thouſand tons are every year manufactured, partly for foreign commerce and partly for the preparation of the fine Spaniſh ſoap. The rocks on the coaſt are chiefly calcareous, and abound with crithmum maritimum, *ſamphire;* viola arboreſcens, *tree violet;* aſtragalus tragacantha, *tragacanth vetch;* the majeſtic antirrhinum Luſitanicum; capparis ſpinoſa, *caper buſh;* and ſtipa tenaciſſima, the celebrated eſparto graſs, which, on account of its extraordinary toughneſs, is uſed for making ropes, mats, chair-bottoms, and, in ſhort, all the articles included under the French term *ſparterie.*

The high mountains of Spain being neither ſo lofty, nor in ſuch large maſſes as thoſe of Swiſſerland, are covered with ſnow only for a few weeks in the year; here therefore, and in the lower mountainous ridges that border the bay of Biſcay, we find a number of plants familiar to the plains of the north of Europe; the fineſt timber trees in Spain are found in theſe elevated regions, and the Engliſh botaniſt might here almoſt think himſelf in his native country; the common oak, the lime, the birch, the mountain aſh, the yew, the beech, the larch, the holly, and the juniper, grow to a conſiderable ſize; of the ſmaller ſhrubs and herbaceous plants the principal are arbutus uva urſi, *bear-berry;* minuartia montana; aſperula Pyrenaica; eryngium Alpinum; arenaria triflora; draba aizoides, and Pyrenaica; ſaxifraga cuneifolia and bryoides; rhododendron ferrugineum; alyſſum montanum, *mountain alyſſon*, and empetrum album, *white crow-berry.*

The long ranges of moderate ſized hills that occupy the greateſt part of Spain conſiſt either of extenſive arid tracts of ſand, of arenaceous ſandſtone, and ferruginous rubble forming the heaths; of dry calcareous diſtricts forming the ſheep-walks; or of moiſt rough granitic and marble ridges, with but a ſhallow ſoil forming the woodlands.

The Spaniſh heaths are gayer and richer with plants than thoſe of any other European country; in ſome parts are thick woods of the *yew-leaved fir* and *ſtone pine*, in others are ſcattered groves of *cork trees*, quercus ſuber; here the traveller is regaled with the fragrance of numberleſs aromatic plants, the thymus maſtichina, *maſtich thyme;*

lavandula ſpica, and ſtæchas, *ſpike lavender;* meliſſa nepeta; origanum heracleoticum; teucrium iva, ſpinoſum, and Luſitanicum; ſalvia officinalis, and Hiſpanica, *common* and *Spaniſh ſage*; and roſmarinus officinalis, *roſemary*; the golden bloſſoms of the *gorſe*, ulex Europæus, a plant chiefly found in England and Spain, and the crimſon, fleſh-coloured, and ſnowy flowers of the arboreſcent *heaths*, erica umbellata, arborea, purpuraſcens, ſcoparia, vagans, auſtralis, &c. mutually heighten each other; now the ſtately growth of the juniperus oxycedrus, or phœnicea attracts attention, then the eye turns with delight to the humble dianthus caryophyllus, *clove July-flower*, glowing by its ſide; the elegant lithoſpermum fruticoſum entangles itſelf among thickets of dwarf-myrtle, and every ſpot of ſand or dry rock, forſaken by other vegetables, is adorned and perfumed by the ciſtus; of this plant there are no leſs than fourteen ſpecies natives of Spain, all of them eminently beautiful for their broad ſilken bloſſoms of pure white or yellow with deep crimſon eyes: the *laurel-leaved ciſtus*, c. laurifolius, is moſt frequent in Old Caſtille, but the commoneſt of all is the ciſtus ladaniferus, *gum ciſtus*, a moſt elegant and fragrant ſhrub from ſix to ſeven feet high, which occupies whole miles of dry rock, and on this account forms a very peculiar feature in the ſcenery of Spain. BOTANY.

The ſheep-walks are for the moſt part open downs with little ſhelter, except here and there a grove of cheſnut trees, or evergreen oaks, quercus ilex; the turf differs eſſentially from that of the Engliſh ſheep-walks in containing very few ſpecies of graſs, being chiefly compoſed of the ſmaller papilionaceous plants. Dactylis cynoſuroides, aira minuta, cynoſurus lima, and aureus, feſtuca calycina, and lygeum ſpartum are the moſt frequent of the graſſes; the other vegetable inhabitants of theſe uplands are ſcabioſa ſtellata, galega officinalis, anthyllis lotoides, and erinacea, cucubalus bacciferus, *berry-bearing campion*; and pſoralea bituminoſa.

The woodlands of Spain demand particular notice, in an account of its vegetable productions; we find here none of that noon-day night of ſhade that ſpreads ſuch an aweful ſolemnity over the receſſes of the German and Engliſh foreſts, the trees are neither ſo large nor is their foliage ſo ample; ſeveral of the calcareous ſummits are covered with

Botany. cheſtnut trees and box, but the great maſs of the woods conſiſts of the *evergreen ſweet oak*, quercus bellote; this tree is about the ſize of a large pear tree, which it ſomewhat reſembles in its manner of growth its leaves are lanceolate, green above and hoary beneath, curled and rather ſcanty; it produces large crops of ſweet acorns which are extenſively applied to the fattening of hogs, and the nouriſhment of the peaſants: intermixed with theſe are the wild olive, the kermes oak, walnut and carob tree (ceratonia ſiliqua); the almond fixes itſelf in the crevices of the rocks along with the rhus coriaria *ſumach*, and coriaria myrtifolia: the laurel, the bay, the lauruſtinus and Portugal laurel attain the height of ſmall trees, and yield a cool and ſhady retreat even in the midſt of a Spaniſh ſummer. The ſmaller flowering ſhrubs that adorn the woodlands of Spain are too numerous to be particularized, the following are the chief, phillyræa anguſtifolia, linum arboreum, daphne Gnidium, cytiſus nigricans, collutea arboreſcens, *tree ſenna*; arbutus unedo, *arbute*; cupreſſus ſempervirens, *cypreſs*; geniſta Canarienſis and Luſitanica, *Canary* and *Portugal broom*; jaſminum fruticans, *yellow jaſmine*; roſa Gallica, *Provence-roſe*; and meſpilus pyracantha.

Where the ground is ſufficiently deep and moiſt for cultivation and rich paſturage, a number of beautiful bulbous-rooted plants appear early in the autumn and ſpring, and give a peculiar gaiety at that time to the Spaniſh proſpects; two ſpecies of aſphodel, the ramoſus and fiſtuloſus, may be ſaid in a manner to overſpread the whole country, many alſo of the following are ſcarcely leſs common: amaryllis lutea, *yellow amaryllis*; leucojum autumnale, *autumnal ſnow-flake*; narciſſus jonquilla, *jonquil*; narciſſus tazetta, bulbocodium and ſerotinum; hyacinthus racemoſus and comoſus, *cluſtered hyacinth*; erythronium dens canis, *dog's-tooth violet*; anthericum liliaſtrum; lilium bulbiferum and martagon, *orange* and *martagon lily*; polyanthes tuberoſa, and tulipa ſylveſtris, *wild tulip*. Several ſtrong ſmelling umbelliferous plants are alſo natives of Spain, ſuch as cachrys libanotis; anethum fœniculum, *fennel*; ferula communis, which yields the gum ſagapenum; and ferula ferulago, from which galbanum is procured. The fallows and dry thickets abound with chamærops humilis, the *fan-palmetto*; lupinus luteus,

luteus, *yellow-lupin*; fumaria ſpicata, *ſpiked fumitory*; ſpartium junceum and ſphærocarpon, *Spaniſh broom*, and another ſpecies with yellow bloſſoms; ſpartium monoſpermum, *white-broom*; and antirrhinum amethyſtinum. In the hedges, and by the ſhady road-ſides are found the *laurel*, prunus laurocerafus; iris alata and juncea, *winged* and *ruſh-leaved iris*; atropa mandragora; ſmilax aſpera; digitalis ambigua, lutea, and ferruginea, three ſpecies of *fox-glove*; pæonia officinalis, *pæony*; paſſiflora cærulea, *common paſſion flower*; anagyris fœtida, *ſtinking bean trefoil*; and ariſtolochia rotunda, *birth-wort*. Botany.

Both Spain and Portugal are for the moſt part deficient in water, the rivers flow through rocky channels, and therefore there are few marſhes, and ſtill fewer bogs: the ſides of rivulets are adorned with the oleander, laburnum, tamariſk, and myrtle, which in theſe ſituations grow with unuſual luxuriance; with the iris xiphium and pumila, cyperus longus and eſculentus, arundo donax, *Spaniſh reed*, droſſera Luſitanica and pinguicula Luſitanica.

The vicinity of Liſbon and Oporto, and of a few other towns on the coaſt, is remarkable as to its botany for a number of Indian, African, and American plants, which have gradually ſtrayed out of the gardens, and have become completely naturalized to the ſoil and climate; the hedges to the fields are not unfrequently formed entirely of the *American aloe*, agave Americana; and the cactus opuntia, *Indian fig*; the rich ſoil on the bank of the Tagus glows with the ſplendid ſcilla hyacinthoides, the ornithogalum Arabicum, and the allium ſpecioſum; and the ſheltered groves and ſunny rocks of Belem preſent the ſtately magnolia grandiflora, cercis ſiliquaſtrum, phœnix dactylifera, *date palm*; cupreſſus Luſitanica, a beautiful kind of cypreſs originally from Goa; thea viridis, tea-tree from China; olea fragrans and gardenia florida, *Cape jaſmine*; meſembryanthemum cryſtallinum, *ice plant*, and ſeveral others of the ſame genus from the Cape of Good Hope; and the fragrant myrica Faya, from Madeira. Of the eſculent plants and fruits cultivated in Spain and Portugal, beſides thoſe already mentioned, the following are the chief: *wheat*, and *barley*; *rye*, and *rice*, oryza ſativa; in ſmall quantity; *oats* ſcarcely at all; *maize*, zea mays; *Guinea corn*, holcus ſorghum; *millet*, panicum miliaceum,

Botany. miliaceum, in conſiderable quantity; *ſweet potatoe*, convolvulus batatas; *plantains*, muſa paradiſiaca; *chick pea*, cicer arietinum; *lupin*, lupinus albus; *Monk's beans*, dolichos catjang; *Jeruſalem artichoke*, helianthus tuberoſus; ſolanum lycoperſicon, *love apple*; all the varieties of *gourds*, *cucumbers*, and *melons*; ficus carica, *figs*; grapes, oranges, lemons, bergamot oranges, and all the finer fruits of our Engliſh gardens.

Zoology. The glory of Spaniſh zoology is the horſe, which has been famous in all ages, probably originating from the barb, or beautiful and ſpirited ſteed from the north of Africa, the immediate offſpring of the Arabian. The Spaniſh mules are alſo excellent, and the aſs is here no ignoble animal, though not equal to that of Arabia; whence a far ſuperior breed of this uſeful quadruped might be introduced. The cattle ſeem little remarkable; but the breed of ſheep has been long celebrated as perhaps ſuperior to any in the world, for the delicacy of the mutton, and the beauty of the fleece. The purity of the air, and aromatic paſture, no doubt contribute to both qualities, which, it is to be ſuſpected, would degenerate on tranſportation. Spain produces one or two quadrupeds and ſome birds, not known in the reſt of Europe, as the Viverra genetta, the Vultur percnopterus, the Cuculus glandarius, the Tridactyla, the Motacilla Hiſpanica, and the Hirundines melba, and rupeſtris, all of Linnæus, the latter alſo found in Carniola.*

Mineralogy. The mineralogy of Spain was anciently of more importance than in modern times. Pliny,[11] after obſerving that ſilver was generally found with galena or lead ore, proceeds to ſtate that the faireſt of all ſilver was found in Spain, where the pits, begun by Hannibal, laſted to his time, being known by the names of their original diſcoverers. That called Bebelo had yielded to Hannibal 300lb. weight a day, a mountain being pierced for a mile and a half, through which the workmen directed large ſtreams of water; ſo that the plan purſued ſeems to have been that called huſhing by modern writers. Strabo[12] informs us that the province of the Turditani, modern Andaluſia, was the moſt pro-

* The Spaniſh locuſt is the only one with roſe-coloured wings, and ſeems indigenous. Dillon, 268.

[11] Lib. xxxiii. cap. vi. [12] Lib. iii.

ductive

ductive of precious metals; and gold, silver, brass, and iron were no where found more abundant, nor of better quality: gold was found in the sands of the rivers and torrents, a known attribute of the Tagus. His account also leads us to infer that hushing was the method practised. That geographer adds, that though the Gauls affected to prefer their precious metals, which were found in Mount Cemmenus, chiefly towards the Pyrenees, or that part of the Cevennes which lies near Foix, yet the Spanish were doubtless superior, lumps of pure gold being sometimes found half a pound in weight; but it was frequently discovered in the state of electrum, or mingled with silver. Strabo also mentions gold and silver mines among the Artabri in the N. of Portugal; and Polybius informs us concerning the mines of silver near Carthagena, which occupied a number of workmen, and yielded to the Romans 25,000 drachms daily. Other mines of silver were found near the sources of the Bætis. This intelligence becomes of the more importance, as Britain and other regions of the west certainly derived their gold and silver from Gaul and Spain, in return for cattle, hides, and other products. MINERALOGY.

At present almost the only silver mines in Spain are those of Guadalcanal, in the Sierra Morena, but rich veins of that metal, in a suliginous state, exist in many places.[13] At Almaden in La Mancha are valuable mines of quicksilver, which are chiefly remitted to Spanish America, and employed in refining the more precious metals. Calamine appears near Alcavas; cobalt in the Pyrenees; antimony in La Mancha; copper on the frontiers of Portugal;* tin in Galicia; and lead is common as in many districts. The iron of Spain is abundant, and still maintains its high character; and coals are found in the district of Villafranca, in Catalonia, where also occur gold, silver, copper, and lead.[14] Amber and jet (in Spanish *azabache*) are found together in the territory of Beloncia in the Asturias. The amber is bedded in slate, and presents a woody appearance, but when broken there are white nodules, enclosing the substance which is of a bright yellow. The

[13] Journal des Mines, An v. 387, &c.

* See Dillon, 196. for an account of the copper mine of La Platilla, near Molina.

[14] Townsend. iii. 344, 345.

other

Miner-ology

other minerals are rather curious than important, ſuch as the beautiful cryſtallized ſulphur found at Conilla not far from Cadiz, the elaſtic marble of Malaga, the green marble reſembling the Verde Antico found near Granada, and the red gypſum with red cryſtals of Compoſtella. Murcia produces that fine red earth called *almagra*, with which the Spaniſh ſnuff is mingled.[15] The aventurine ſeems a Spaniſh name, and a Spaniſh diſcovery, being a felſpar ſprinkled with golden mica, diſcovered in Arragon and near the cape de Gata in Granada, but fine ſpecimens are alſo brought from Piedmont; and according to ſome late mineralogiſts, the richeſt are the Ruſſian, from the little iſle Cedlovatoi in the White Sea.

Mineral Waters.

Spain contains many mineral waters, but few are celebrated. The hot ſprings of Rivera de Abajo are ſituated not far from Oviedo, and bear ſome reſemblance to thoſe of Bath. Near Alicant are the baths of Buzot, warm ſprings of a chalybeate nature, riſing like the former among calcareous hills.

Natural Curioſities.

The natural curioſities of Spain have been little illuſtrated. The rock of Gibraltar, as is well-known, in ſome parts contains bones which have been ſuppoſed to be human; but are now diſcovered to belong to quadrupeds, and to have been depoſited in the fiſſures from above. This rock is chiefly calcareous, and on the weſt ſide is a ſtalactitic cave called St. Michael's. The river Guadiana, riſing in a calcareous country, appears and diſappears like ſome of our ſtreams in the N. of England under ſimilar circumſtances. A deep and rugged dale near Alberca, in Eſtramadura, once attracted great notice from the ſingular manners of the inhabitants.[16]

SPANISH ISLES.

The chief circumjacent iſlands belonging to Spain are Majorca, Minorca, and Eviza; or according to Spaniſh orthography Mallorca, Menorca,

[15] J. des M. Ib.] [16] Dillon, 270.

Menorca, Ibiza. Majorca is about 55 Engliſh miles in length, by 45 in breadth. The N. W. part is hilly; the reſt abounds with cultivated land, vineyards, orchards, and meadows; the air is temperate, and the honey highly eſteemed: there is generally a conſiderable military force in the iſle. The capital, ſeated on a fair bay, is an elegant city, and is ſuppoſed to contain 10,000 inhabitants. Here was born the famous Raymond Lully, a viſionary of the fourteenth century. Majorca was re-conquered from the Moors by James I, king of Arragon, in 1229. In 1262 it was aſſigned to a prince of the houſe of Arragon: James the firſt king died in 1311, aged 68; and was ſucceeded by Sancho; who in 1324 was followed by James II, defeated and ſlain in 1349 by the army of the king of Arragon, to which crown the iſle reverted. James II king of Majorca drew up a code of Palatine laws, for the domeſtic government of the palace, which is ſtill extant. Spanish Isles. Majorca.

Majorca is generally in too ſtrong a ſtate of defence to admit of an eaſy conqueſt, but Minorca has been repeatedly ſeized by the Engliſh, to whom it preſents an advantageous ſtation for the Mediterranean trade. It is about 30 miles in length, by about 12 of medial breadth. The air is moiſt, and the ſoil rather barren, being chiefly calcareous, with lead, and fine marble. The wine is praiſed; and the inhabitants retain a ſhare of their ancient reputation as excellent ſlingers. Cittadella, the capital, has a tolerable haven, but the population and fortifications are of little conſequence. Port Mahon on the S. E. has an excellent harbour; and received its name from Mago the Carthaginian general. Minorca.

Eviza is the neareſt to Spain, about 15 miles long and 12 broad. It is remarkable for its fruits, and abundance of excellent ſalt.

TURKEY IN EUROPE.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

THE Turkiſh empire, once ſo formidable to Europe, has lately ſunk before the power of Ruſſia; and may probably, at no very diſtant period, be utterly annihilated, or reduced to a few Aſiatic provinces. Yet ancient fame conſpires with the remaining extent and population of the Turkiſh dominions, to entitle this power to a place among the preponderating ſovereignties both of Europe and Aſia. Turkey in Europe is computed to contain 182,560 ſquare miles; an extent which exceeds that of Spain, or even France under the ancient monarchy; and muſt therefore be ſtill claſſed among the leading powers even of this quarter of the world.

Names and Provinces.

As European Turkey forms a recent ſovereignty, the greater part of which was ſubjugated in the fifteenth century, after the fall of Conſtantinople and of the Byzantine empire, there is no ancient appellation for its whole extent. It embraces many ancient kingdoms and republics, which now only afford a melancholy remembrance of claſſical names and events. Moldavia, the moſt northern province, was part of ancient Dacia; and Jaſſy the capital was the *Iaſſiorum Municipium* of

the Romans. Budzac, or Beſſarbia, was a country of the Getæ and Peucini. Walachia was alſo a province of the ancient Dacians; while Bulgaria on the S. of the Danube embraces nearly the two provinces of Mæſia. Romelia, a vaſt territory, contains ancient Thracia, Pæonia, Macedonia, and the northern part of the claſſical country of Greece; while the Morea is equivalent with the ancient Peloponneſus. To the W. of Romelia extends Albania; which includes the kingdom of Epirus, Chaonia, and a part of Illyricum. Dalmatia retains its ancient appellation: while Servia and Boſnia repreſent ancient Pannonia. Turkiſh Croatia, the moſt weſtern province of the empire, alſo forms a portion of ancient Pannonia, with perhaps a ſmall diſtrict of Noricum; but the Turkiſh part of Croatia is a diminutive province, about 40 miles in length by 20 in breadth, limited by the river Save on the north, and partly by the river Unna on the weſt. Names, &c.

In recent times Turkey has loſt the provinces of the Krim, and new Servia, which, with ſeveral Aſiatic diſtricts, have become ſubject to Ruſſia; and on the W. Tranſylvania, Sclavonia, with the Buckovin a part of Moldavia, and a great part of Croatia, have fallen under the power of Auſtria.

Turkey in Europe extends about 870 miles in length, from the northern boundary of Moldavia, to Cape Matapan in the Morea. The breadth, from the river Unna to Conſtantinople, is about 680 Britiſh miles. The eaſtern and ſouthern boundaries are formed by the Euxine or Black ſea, the ſea of Marmora, the Archipelago, and the Mediterranean. The utmoſt northern limit is now the river Dnieſter; but the weſtern often conſiſts of an arbitrary line, and is ſometimes ſupplied by rivers or mountains. Extent.

The original population of this empire chiefly ſprung from the ancient Scythians on the Euxine, the progenitors of the Dacians, Thracians, &c. and even of the Greeks. Theſe were originally blended towards the north, with many Sarmatic or Slavonic tribes: and on the fall of the Roman empire the latter ſpread more and more towards the ſouth, ſo that nearly one half of the population may now be regarded as Slavonic; but Walachia is ſuppoſed to contain many deſcendants of the ancient Roman ſettlers in Dacia. The extent of the Original Population.

ORIGINAL POPULATION.

Turkiſh empire has contributed to mingle this original population with various Aſiatic races, among whom the Turks themſelves deſerve particular mention. That branch called the Ottomans, which has proved ſo deſtructive to Europe, derived their name from the Calif Othman, who reigned in the beginning of the fourteenth century, and extended his ſway into the plains of Bithynia, in which he conquered Nicomedia and Pruſa, and thus approached even to the gates of Conſtantinople.[1] But the name and power of the Turks are of far more remote antiquity. They are ſuppoſed to have deſcended from the Altaian mountains in Tatary, about the middle of the ſixth century; and ſpread gradually towards the weſt, till they reached the lake Mæotis.[2] Yet the ſtrength of the empire reſtricted them to the region near the river Oxus, whence the Califs derived their Turkiſh guards, who afterwards ſubverted the throne of Bagdad. The Hungarians, who ſpread deſtruction through great part of Europe in the tenth century, are ſuppoſed to have been a branch from the Turkiſh ſtem: but the Turks, or Turkomans, properly ſo called, ſpread from the Oxus and Samarcand to the eaſt of Perſia, where Mahmoud of Gazna eſtabliſhed a powerful kingdom, ſubdued by the Turks of Bochara, who in the eleventh century founded the dynaſty of the Seljuks. The Sultans of this race gradually extended their power towards the weſt, and Armenia and Georgia were among their firſt acquiſitions in the Byzantine empire; the continuation of which ſeems remarkable, when it is recollected that the Turks had almoſt ſubdued the whole of Aſia minor, before the commencement of the twelfth century. Yet the progreſs of the Cruſades checked the extenſion of the Turkiſh ſway, and by the capture of Nice conſtrained them to remove the ſeat of power to Iconium. Towards the middle of the fourteenth century the Turks firſt paſſed into Europe; and ſoon after ſeized the greateſt part of Thrace. In the beginning of the fifteenth century their ſultan Bajazet extended his conqueſts even to the Danube; and the provinces of Thrace, and Macedonia, fell under the Turkiſh ſceptre, while Adrianople became the ſeat of their government.

[1] Gibbon, xi. 432. [2] Ib. vii. 284.

From

From this deduction it will appear that it was chiefly with European troops that the Turks finally ſubverted the Byzantine empire. From the diverſity of nations which joined their ſtandard, from intermarriages with women of Circaſſia, and many other circumſtances which need not be here recapitulated, the modern Turks may be regarded as a mixture of many races of men. If they originally ſprung from the Altaian mountains, as the beſt records induce us to believe, they ſeem to have formed a part of the nations ſtyled by the ancients "the Scythians beyond the Imaus;" and their ſubſequent ſettlement on the Oxus muſt have ſwelled their population with Sogdian and Bactrian tribes. Original Population

The progreſſive geography of Turkey in Europe is reflected in the greateſt luſtre from the claſſical pages of antiquity, and through the annals of the Byzantine empire to modern times. It would be idle to repeat the well-known geography of ancient Greece, and of the regions to the north of that illuſtrious ſeat of arts and letters. Under the Byzantine empire, in the tenth century, they equalled any European provinces, or *themes* as they were quaintly denominated; and while that of the Peloponneſus contained no leſs than forty cities, we lament the devaſtations of the Ottoman barbarians, whoſe only power is to deſtroy, and whoſe baleful ſway extinguiſhes all induſtry and proſperity. The Turkiſh diviſion into provinces has been already ſtated: and it may perhaps be ſpeedily the office of geography to repeat the new provinces eſtabliſhed by the Ruſſians and Auſtrians. Progreſſive Geography.

It would be equally difficult and unſatisfactory minutely to ſtate the hiſtorical epochs of this extenſive dominion, containing ſo many ancient kingdoms and ſtates. It ſhall therefore be only premiſed that, after the Roman arms had ſubdued theſe countries and cities, many of which are celebrated in the moſt ancient pages of hiſtory, they became in the fifth century an important part of the Byzantine empire; and the hiſtorical epochs moſt appropriated to the preſent deſign will delineate their gradual ſubjugation by the Turks. Hiſtorical Epochs.

1. The firſt dawn of Turkiſh hiſtory preceding the reign of Othman, A. D. 1299.

2. In the reign of his ſucceſſor, Orkan, the Turks take Gallipoli, and penetrate into Thrace; which province was ſoon after conquered,

Historical Epochs.

and Adrianople was taken A. D. 1360. Two years afterwards the ſultan Amurath eſtabliſhed the famous military bands called janizaries, compoſed of Chriſtian ſlaves educated in Mahometaniſm from their infancy.

3. The reign of Bajazet, who defeats the Hungarians at Nicopoli, in Bulgaria, A. D. 1396. In 1402 the famous battle near Ancyra, between Bajazet and Timur, which for a period checked the Turkiſh power: yet in 1412 the Emperor Sigiſmund was defeated by the ſultan Mouſa with great ſlaughter.

4. The Turks continue to encreaſe their dominion in Europe, though they received ſevere checks from the Hungarians under Hunniades, and even from the Albanians commanded by the celebrated George Caſtriota, called by the Turks Scanderberg.

5. Conſtantinople taken by the Turks on the 29th of May 1453. In 1456 the ſiege of Belgrade by Mahomet II. Corinth and the Morea became ſubject to the Creſcent A. D. 1458. In 1480 Otranto in Italy was taken by the Turks, an event which diffuſed great terror throughout Europe.

6. A conſiderable acceſſion to the Turkiſh power by the conqueſt of Egypt, A. D. 1517. In 1522 Rhodes ſubmits to the Turks: the knights were afterwards transferred to Malta. In 1526 the noted battle of Monatz, in which Lewis king of Hungary periſhed; and the ſultan Soliman ſoon after took Buda. In 1529 he beſieges Vienna at the head of 250,000 men, but the city being bravely defended by Frederic, prince palatine, the Turks withdrew with great loſs. In 1552 the Turks ſeized the Bannat of Temeſwar: and took Cyprus from the Venetians in 1571.

7. In the ſame year was the famous naval battle of Lepanto, which delivered Europe from any apprehenſion of the Turks by ſea. They continued however to invade Hungary with various ſucceſs. But their wars with Perſia gradually diverted their arms from Europe. In 1642 the ſultan Ibrahim took from the Coſſacs the town of Azof at the mouth of the Don. Towards the middle of this century, they ſeized ſome Grecian iſles, which the naval power of the Venetians had enabled them to retain.

8. Mahomet

8. Mahomet IV renews the wars againſt the emperor of Germany; and in 1663 the Auſtrians were defeated in Hungary. The iſle of Candia is taken in 1669 after a long blockade and ſiege. Wars with Poland. The ſiege of Vienna, 1683, raiſed by John Sobieſki king of Poland. Hungary became the ſcene of repeated Turkiſh and Auſtrian conqueſts, till 1699, the peace of Carlovitz, by which the Turks yielded Tranſylvania to the Auſtrians, the Morea to the Venetians, and Azof to the Ruſſians. Historical Epochs.

9. In 1736 a ſucceſsful war with the Ruſſians and Auſtrians; the Turks by the peace of 1739 reſumed Belgrade and Orſova, with ſome parts of Servia and Walachia, formerly ceded to Auſtria; and Ruſſia is conſtrained to abandon Azof.

10. The more recent wars of the Ruſſians againſt the Turks, and the ſubſequent decline of the Ottoman empire.

Some of the events here commemorated are comparatively minute; but the Turkiſh power has been ſo deſtructive, wherever it ſpread, to the beſt intereſts of humanity, that even the ſmaller ramifications of ſuch a peſtilence ſeem not undeſerving of being commemorated, with the ſame curioſity that natural hiſtorians deſcribe the utmoſt extent of an earthquake.

The ancient monuments of European Turkey are well known to exceed in number and importance thoſe of any other country. The remains of ancient Athens, in particular, formerly the choſen ſeat of the arts, have attracted the attention of many travellers, and have been ſo repeatedly deſcribed that any further comment would be ſuperfluous. A venerable monument of antiquity, the church dedicated to the divine wiſdom, or vulgarly Sancta Sophia, by the emperor Juſtinian in the ſixth century, has been fortunately preſerved, by being converted into a moſk, though the architecture be greatly inferior to that of the claſſical period, yet the effect is grand and impreſſive, and the cupola is admired as a bold and ſkilful effort of the art, while the ſeeming weight is diminiſhed by the lightneſs of the materials, being bricks formed of a particular clay which will float in the water.[3] The interior is adorned with a profuſion of marble Antiquities.

[3] Gibbon, vii. 120.

columns,

ANTIQUITIES.

columns, of various beautiful deſcriptions, the purple Phrygian, the Spartan green, the red and white Carian, the African of a ſaffron colour, and many other kinds. The other antiquities of Conſtantinople, and other parts of European Turkey, would occupy many pages in the bare enumeration, which would be little gratifying to the reader whoſe curioſity will be better ſatisfied by the prints, than by any deſcription of ſuch objects, which can never convey diſtinct ideas. Suffice it here to obſerve that the French have recently diſcovered the remains of the ancient ſea-port belonging to Sparta, near a barren promontory, which projects from the ſouth of the Morea; and that the antiquities and geography of that part now ſtyled Albania, ſtill preſent a field of reſearch to the enterprizing traveller.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenues.—Political Importance and Relations.

THE religion of the Turks is the Mahometan: but of their ſubjects, in this diviſion of the empire, it is probable that two thirds are Greek chriſtians; a circumſtance which would facilitate and endear the domination of the Ruſſians, who follow the ſame perſuaſion. The religion of Mahomet has been recently cleared from many erroneous repreſentations; but its pernicious effects are ſufficiently viſible in the deſtruction of art and induſtry, wherever it has made its appearance. The excluſive attachment to the Koran, the rigid fanaticiſm, and the contempt for profane knowledge, conſpire with the devout hatred againſt all unbelievers, to prevent any intercourſe with other ſects, and thus to erect a barrier againſt every branch of ſcience and induſtry. While the Mahometans regard all other nations as dogs, to uſe their own expreſſion, it is no wonder that they themſelves ſhould ſink into an ignorance and apathy truly brutal. This ſingle principle of uſurped ſuperiority muſt ever render them inferior to other nations; but as the Turkiſh Sultan has been for ſome centuries the chief leader and ſupport of this devouring ſyſtem, of which his ſubjects themſelves begin to perceive the defects, it is to be conceived that his fall would conſiderably weaken the Mahometan faith; and that thoſe proud uſurpers of all human virtue and merit would find their former arrogance returned with due contempt by ſurrounding nations. The Mufti or Mahometan pontiff preſides at Conſtantinople; but his power has ſeldom interfered with the civil government. Next to him in rank are the Moulahs, who, though eſteemed dignitaries of the church, are in Religion.

Religion. fact rather doctors of the law, while the Koran is alſo a code of civil obſervance, and is expounded in numerous treatiſes which regulate the proceedings of the eccleſiaſtic judges.[1] From the Moulahs are ſelected the inferior Muftis, or judges, throughout the empire; and the Cadileſquiers or chief juſtices.

The next claſs of divines are the Imaums or pariſh prieſts, who perform the ſervice of the moſks, while the Cadis are judges annually appointed to adminiſter juſtice in the towns and villages, being themſelves to be regarded as churchmen, who like the Moulahs have directed their chief attention to the juridical part of the Koran.

From this brief view it will be obſerved, that the eccleſiaſtical orders of Muftis and Imaums ſomewhat reſemble the chriſtian biſhops and parochial clergy: while the other diſtinctions ariſe from the ſingularity of both religion and laws being united in the Koran, ſo that a lawyer or judge muſt at the ſame time be a ſkilful divine.

The Turks have alſo their monks, ſtyled Derviſhes, of four various orders and inſtitutions, dedicated by ſolemn vows to religious offices, public prayer, and preaching. A moſt ſingular order is that of the Kadri, who appear almoſt in a ſtate of nudity, and affect to diſplay their devotion by frantic and extravagant dances.

The Greeks, along with their faith, retain their prieſts, biſhops, archbiſhops, and patriarchs; but their church is in the laſt ſtate of degradation, and its dignities openly ſold by the Turks. Travellers have expreſſed the deepeſt regret at this abomination, ariſing partly from the Mahometan delight in rendering the Chriſtians contemptible; and partly, it muſt be confeſſed, from the miſerable ambition and avarice of the Greek eccleſiaſtics, who think they can atone by idle ceremonies for the neglect of all the invaluable morality of the goſpel.

Eccleſiaſtic Geography. The eccleſiaſtic geography of theſe degraded regions muſt of courſe be only intereſting to the mere antiquary, as it can throw no light on its hiſtory, and little even on its topography.

Government. The Sultan is a deſpotic ſovereign; but he is himſelf ſtrictly ſubject to the laws of the Koran, which including alſo the national religion, raiſe ſuch obſtructions to his abſolute will, that an intelligent traveller

[1] Porter's Obſervations on the Turks, p. 41, &c.

pronounces

pronounces many Chriſtian ſovereignties more deſpotic.[2] Yet the ſame author allows that, in order to ſecure private property, the reverſion is commonly aſſigned to the church, which would thus in time ſwallow up all the eſtates and poſſeſſions of the empire. In no European country has the government ever been ſo deſpotic that a recourſe to ſimilar practice became neceſſary. But it appears that the deſpotiſm of the monarch is balanced by a religious ariſtocracy; and not to mention the inſurrections of Janizaries or Prætorian bands, the common peril of every deſpotic adminiſtration, the recent diſaſters have greatly infringed the power of the Sultan: for many Paſhas have uſurped the ſovereign power over their own provinces, and ſet every effort of the Porte at defiance, than which there cannot be a ſtronger ſymptom of the perdition of the empire. GOVERNMENT.

The Turkiſh laws, as has been already mentioned, are contained in the Koran, and in the comments of approved and renowned doctors. As unhappily no religious ſyſtem has ever made its firſt appearance amid a great and enlightened nation, but only in ſmall tribes, and in the firſt ſteps of the ſocial progreſs, ſo the laws of the Koran, however well adapted to a few poor and ſimple Arabs, yet as Mahomet had no viſion of the glories of Bagdad, Iſpahan, Samarcand, Delhi, Cairo, Cordova, or Conſtantinople, his code little provides for the advanced ſtages of ſociety. To ſupply this defect, ſucceſſive Moulahs of high reputation, uſing the Koran as a kind of text, have conſtructed commentaries which have acquired the force of laws. The Turkiſh empire is chiefly guided by thoſe of Abou-Hanife. As a due ſkill in theſe commentaries requires conſiderable ſtudy, eccleſiaſtics verſed in this ſcience became in ſome degree a diſtinct body from thoſe merely dedicated to the prieſthood. The laws concerning property are ſufficiently equitable; and it is a groſs miſtake to ſuppoſe that females do not inherit; but it would be vain to deny that the avarice of the Paſhas, and the venal diſpoſition of the prieſts, would overleap the barriers ſet even by Mahomet, and much more thoſe appointed by his commentators. The written laws of a country may be excellent, while the mal-adminiſtration leads to every oppreſſion; and the moſt enlightened travellers Laws.

[2] Porter, p. 76.

Laws. leave no doubt that any deciſion may be purchaſed from a Turkiſh judge. Where both parties have nothing to give, and the judge is free from caprice, perhaps a ſhadow of juſtice may be expected.

Population. Turkey in Europe has been computed to contain 8,000,000 of inhabitants; and the extent being ſuppoſed 182,560 ſquare miles, the allotment will be 43 to the mile ſquare. It is probable that this number rather exceeds the truth, when it is conſidered that theſe regions are interſected by many mountainous and barren tracts; and that the population even of the beſt provinces impreſſes all travellers with a ſtriking defect.

Colonies. A Turkiſh colony would be a contradiction in terms, as far from any thought of improving diſtant regions, they are buſy in deſtroying their own.

The Turkiſh army and navy may deſerve more particular conſideration under the head of Aſiatic Turkey, as the chief ſources fall under that diviſion. It may here be briefly remarked that there are about

Army. 30 ſhips of the line; while the army, after the defection of many Paſhas, can ſcarcely exceed 150,000, ill diſciplined, and diſpirited by ſucceſſive diſaſters; and more deſtructive to their own provinces, through which they muſt paſs, than to any ſtate with which they are at enmity; more terrible to their friends than to their foes.

Revenues. The revenues of the whole Turkiſh empire are computed at about 7,000,000 ſterling, while the uſual expence does not exceed five. This revenue is partly derived from the capitation tax on unbelievers, and from the *zecchat* or cuſtoms; but principally from the tax on land, amounting to about ſix ſhillings an acre, and which is called the *jizie*. The ſultan is alſo ſuppoſed to poſſeſs a conſiderable private treaſure; which, when called forth by the exigencies of the ſtate, will probably be found of as ſmall account as the treaſures of ſimilar fame which fell into the hands of the French. A more real treaſure may be expected from the arbitrary exactions from the rich, particularly the Chriſtians.

Political Importance and Relations. The palpable and rapid decline of the Turkiſh empire has of courſe greatly impaired its political importance. At the beginning of the ſixteenth century, when European politics began to aſſume ſome conſiſtency, France, being alarmed by the growing power of the houſe of

Auſtria, entered into an alliance with Turkey, the repeated ſubject of murmur among the Chriſtian powers. Nor was this alliance of much advantage to France, except in ſecuring a more favourable mercantile reception in the Levant; for the diverſions thereby afforded to the Auſtrian arms were ſeldom well timed, or of much importance. This long alliance has been recently violated by the imprudence of the French rulers, who choſe to attack Egypt by open force, without the conſent of the Porte, which deriving little or no advantage from that nominal ſovereignty, would gladly have given it to France as a reward for any active ſervices. In conſequence of this violation the Porte joined the Auſtrians and Ruſſians, in the war againſt France; but the creſcent did not appear on the French frontiers. In virtue of this alliance Ruſſian ſquadrons of war have paſſed the ſacred walls of the Seraglio; and inſpected as friends that weakneſs which may aſſiſt them as enemies. Politicians conſidered this alliance as a mere temporary friendſhip, produced by violent circumſtances; and it is probable that not many years will elapſe before Ruſſia and Auſtria again conſpire againſt European Turkey. The Turks are ſenſible that a ſtrict alliance with Pruſſia would be of ſingular advantage to them; that power can have little intereſt in ſuch a treaty, but muſt on the contrary rather exult to ſee the power of Ruſſia exerted againſt Turkey and Aſia. Meanwhile the Turks have ſpared no endeavour to ſecure the friendſhip of ſeveral European powers, and have appointed reſident ambaſſadors at ſeveral courts, who may be regarded as heralds of their fall; for in their proſperity they diſdained to ſend any envoys, and regarded the ambaſſadors at the Porte as tributary ſlaves, ſent to ſolicit the protection of the Sultan. Amidſt the defection of ſeveral Paſhas, in the eaſt as well as in Europe, it is fortunate for the Ottoman empire that the power of Perſia is dormant.

Political Importance, &c.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.— Language.— Literature.— Education.— Univerſities.— Cities and Towns.— Edifices.—Roads.—Inland Navigation.—Manufactures and Commerce.

Manners and Customs.

THE manners and cuſtoms of the Turks are diſtinguiſhed by the peculiarity of their religion from thoſe of other European nations. On the birth of a child the father himſelf gives the name, putting at the ſame time a grain of ſalt into its mouth.[1] The circumciſion is not performed till the age of twelve or fourteen. Marriage is only a civil contract, which either party may break, and is managed by female mediation, the youth ſeldom ſeeing his bride till after the ceremony. The dead are perfumed with incenſe, and buried in a cloth, open at the top and bottom, that the deceaſed may be able to ſit up and anſwer the queſtions of the angels of death. The burial-grounds are near the highways; and ſtones are often placed at the head of the graves, with carved turbans denoting the ſex. As they never intrench upon a former grave, the cemeteries are very extenſive. In diet the Turks are extremely moderate, and their meals are diſpatched with great haſte. Rice is the favourite food, and is chiefly dreſſed in three ways; the pilau, boiled with mutton or fowl; the lappa, or mere boiled rice; and the tchorba, a kind of broth of the ſame vegetable. In boiling the meat is cut in ſmall pieces; and in roaſting ſtill ſmaller, a bit of meat and an onion being placed alternately on a very long ſpit. The fiſh of the Archipelago are excellent; and the beef tolerable, except that of the buffalo which is very hard. The hares, partridges, and other game are of ſuperior flavour. The meal is uſually ſpread on a low wooden table, and the maſter of the houſe pronounces a ſhort prayer. The

[1] Tournefort, i. 47.

frugal

frugal repaſt is followed by fruits and cold water, which are ſucceeded by hot coffee and pipes with tobacco. The houſes of the Turks are ſeldom expenſive; and the chief furniture is the carpet which covers the floor, with a low ſofa on one ſide of the room. In regard to dreſs, Tournefort[2] obſerves that the uſe of the turban is unhealthy, becauſe the ears are expoſed, and its thickneſs prevents perſpiration. The ſhirt is of callico; and the looſe robe is faſtened by a girdle, in which is ſtuck a dagger; while the tobacco box, pocket-book, &c. are worn in the boſom. The robe is generally of European broad cloth, trimmed with various furs. The ſhoes, or rather ſlippers, are ſlight, and unfit for much exerciſe. The dreſs of the women differs little from that of the men, the chief diſtinction being the head-dreſs; that of the fair ſex conſiſting of a bonnet, like an inverted baſket, formed of paſteboard covered with cloth of gold, or other elegant materials, with a veil extending to the eyebrows, while a fine handkerchief conceals the under part of the face. The perſonal cleanlineſs of both ſexes is highly laudable; but the European eye is not pleaſed with the female cuſtom of ſtaining the nails with a red tincture. The amuſements of the Turks partake of their indolent apathy, if we except hunting, and thoſe of a military deſcription. To recline on an elegant carpet, or in a hot ſeaſon by the ſide of a ſtream, and ſmoke the delicate tobacco of Syria, may be regarded as their chief amuſement. With opium they procure what they call a kief, or placid intoxication, during which the fancy forms a thouſand agreeable images, but when the doſe is too potent theſe are ſucceeded by irritation and ferocity. Cheſs and draughts are favourite games; but thoſe of chance are conſidered as incompatible with ſtrict morals. The coffee houſes, and the baths, furniſh other ſources of amuſement; and the bairam, or feſtival which follows their long lent, is a ſeaſon of univerſal diſſipation. Manners and Customs.

The Turkiſh language is of far inferior reputation to the Perſian or Arabic, being a mixture of ſeveral dialects, and poſſeſſing neither the force, elegance, nor purity of thoſe two celebrated oriental tongues. Literature is not however totally neglected, and it has been repeatedly attempted to eſtabliſh a printing preſs at Conſtantinople; but the de- Language.

[2] i. 79.

ſign

Literature.

ſign failed from the intereſt of the copyiſts, who inferred that this art would deprive them of their bread. A late traveller[3] informs us that there are in this capital ſeveral *kuttub-chans*, or public libraries, among which are thoſe of Saint Sophia and the Solimanie Jamaſy; but none ſo elegant as that founded by the grand vizir Raghid, which is wholly built of marble in the midſt of a ſquare court, and is filled with books chiefly theological. A librarian conſtantly attends, and there are convenient ſeats with carpets and cuſhions. In the neighbourhood is a ſchool founded by the ſame vizir, in which about 100 boys are taught to read and write. The market for books is extenſive, containing many ſhops well ſupplied with oriental manuſcripts. The Turks have their ancient poets, hiſtorians, and divines; but of little reputation when compared with thoſe of Perſia or Arabia.

Education.

The ſtate of education among the Turks may be conceived to be very low, and ignorance is indeed a chief part of the national character. The only profeſſion which requires a ſhadow of learning is that of the law, which, as before explained, is intimately connected with their theology. The celebrated doctors have diſciples, who are trained up to that department; but there ſeems nothing that can deſerve the name of college or univerſity.

Cities and Towns. Conſtantinople.

The chief city of European Turkey, and of the Turkiſh empire, is Conſtantinople, ſo called becauſe founded by Conſtantine, on the ſite of the ancient Byzantium. The advantages of the ſituation can hardly be exceeded, and the aſpect from the ſea is peculiarly grand; but on a nearer approach the wooden hovels, and narrow ſtreets, diſappoint the ſplendid expectations of the ſpectator. The beautiful deſcription by Gibbon is known to every reader; and recent travellers have applauded its accuracy.[4] This capital forms an unequal triangle, reſembling a harp, being about twelve or fourteen Engliſh miles in circumference, encloſed by walls, and on two ſides by the ſea, and the harbour called the Golden Horn. The inhabitants are computed at 400,000, including the four ſuburbs, Galata, Pera, Tophàna, and Scutari. Of theſe 200,000 are Turks: 100,000 Greeks; and the remainder Jews, Armenians, and Franks. The moſt celebrated edifices are the Seraglio,

[3] Browne, p. 422

[4] Dallaway's Conſt. 15.

which

which comprizes a large ſpace crowded with various buildings of mean architecture; and the moſk of Sancta Sophia, already mentioned. The principal entrance of the Seraglio is ſtyled Capi, or the Porte, an appellation which has paſſed to the Turkiſh court. The frequent viſitations of the peſtilence, and the conflagrations often kindled by popular diſcontent, render Conſtantinople an unpleaſant reſidence. Cities and Towns.

Next in dignity and extent is the city of Adrianople, formerly the European ſeat of the Turkiſh dominion. This city, which ſtands about 140 Britiſh miles to the N. W. of Conſtantinople, was founded by the emperor Hadrian on the ſite of the ancient Oreſtias. It is waſhed by the Hebrus, now the Maritz, which here receives two tributary ſtreams.[5] This ſecond city of European Turkey is of a circular form, ſurrounded by a wall and towers. Many of the houſes are reſpectable, but the ſtreets are narrow and indirect. The ſeraglio is in a pleaſant ſituation, ſeparated from the city by the river Arda, and commanding an extenſive view of the country, which is fertile, and remarkable for excellent vines. Several of the moſks are of celebrated ſplendour, and the commerce of the city by the river is not inconſiderable.* Adrianople

Filibe, or Filipopoli, is meanly built, without fortifications, or one good ſtreet; the ſituation being ſo low and moiſt, that the mud is ſometimes two feet deep, and ſtones like poſts are ſet up to facilitate the progreſs of foot paſſengers. Yet it is a city of conſiderable ſize.[6]

The city of Sofia, ſituated in a low country N. W. from Adrianople, is of conſiderable trade, but meanly built: the inhabitants are computed at 70,000. Sofia.

Siliſtria in Bulgaria, on the river Danube, is computed to contain 60,000 ſouls; while Bucchoreſt, the chief city of Walachia, is eſtimated at the ſame number; but Jaſſy, the leading town of Moldavia, and Bender of Beſſarbia, are only eſtimated each at 10 or 12,000.

Belgrade, the capital of Servia, repeatedly diſputed between the Auſtrians and Turks, is now deſtitute of fortifications, but is ſuppoſed to Belgrade.

[5] Buſching, iii. 340.

* Add, from the information of a late traveller in MS., that this city is nearly two miles in circuit, unfortified: on the S. E. is a large moſk on a hill, whence the city may be ſeen to the N. W.

[6] MS. information.

Cities and Towns.

retain about 25,000 inhabitants. Banjaluka in Bofnia is alfo a conſiderable town, ſuppoſed to contain 18,000 ſouls.

Salonica.

In the more ſouthern provinces muſt firſt be named Salonica, computed at 60,000, a city of conſiderable commerce, ſeated on a noble gulph of the Archipelago. About 80 Britiſh miles to the S. is Lariſſa, an inland town, but ſuppoſed to contain 25,000 ſouls. Atini, the ancient Athens, is of ſmall population; and this region of claſſical cities now ſcarcely preſents another town worthy of commemoration in general geography.

Edifices.

Excluſive of the ſeraglios and royal palaces, which themſelves poſſeſs little claim to architectural grandeur or beauty, the chief edifices in Turkey are the moſks and caravanſeras. The moſt beautiful moſks are thoſe of the capital, and Adrianople, and are generally kept in excellent repair, as the church poſſeſſes ample revenues for that purpoſe, and the intereſt and honour of the clergy are promoted by preſerving their ſplendour. The caravanſeras, on the contrary, are often neglected. Theſe buildings are generally in the form of a ſquare, encloſing a court; the upper chambers being deſtined for travellers, and the lower for horſes and camels. They are often founded by legacies of the opulent; but the truſtees, having no perſonal intereſt, generally ſquander or alienate the funds allotted for their ſupport, ſo that theſe uſeful edifices, ſome of which boaſt ſuperior elegance, are permitted to fall into ſhameful decay.

Manufactures and Commerce.

The manufactures and commerce of Turkey in Europe are chiefly in the hands of foreigners; but as what is called the Levant trade almoſt entirely centers in Smyrna, and the Aſiatic ſhore, this ſubject will be more properly deſcribed in that part of this work which relates to Aſia. The native manufactures exported from European Turkey are inconſiderable, being chiefly carpets, and a few other articles; but the rude products are far more numerous, as currants, figs, ſaffron, ſtatuary marble from Paros, ſilk, and drugs.

CHAPTER IV.

NATURAL GEOGRAPHY.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

CLIMATE AND SEASONS.

THE extenſive regions compriſed within the limits of European Turkey enjoy, in general, a delicious climate, pure air, and regular ſeaſons. Ovid, who was baniſhed to modern Bulgaria, has written many elegiac complaints on the ſeverity of the clime; and it ſeems an undoubted fact that the ſeaſons have become more genial, ſince Europe has been ſtripped of thoſe enormous foreſts, which diffuſed humidity and cold: for countries, anciently repreſented as full of moraſſes and water, are now dry and ſalubrious; and the rivers are not only confined to narrower channels, but many that uſed to freeze every winter now devolve a turbid but free ſtream. The climate of Moldavia, which Ovid would have painted like that of Lapland, is now little inferior to that of Hungary, though the weſtern part be mountainous, and the eaſtern preſent many uncultivated deſerts. In Walachia the air is ſo temperate that vines and melons proſper. In the mountainous parts of the more ſouthern diſtricts the temperature muſt partake of the cold, univerſal in ſuch elevated regions; but the products of Macedonia and Greece, rice, vines, olives, ſhew that the climate retains its ancient praiſe.

FACE OF THE COUNTRY.

The general appearance of Turkey in Europe is rather mountainous; but abundantly interſperſed with delicious plains and vales: and to the N. W. of Conſtantinople there is a plain country of vaſt extent, while the ſhores of the Euxine preſent many level deſerts. Beſides the grand ſtream of the Danube many large and beautiful rivers interſect theſe

Face of the Country. provinces, and the numerous gulphs of the Archipelago and Mediterranean diverſify and enrich the country.

Soil and Agriculture. The ſoil is generally fertile, the northern parts producing wheat and rich paſture, the middle and ſouthern abundance of rice. But agriculture, like every other art and ſcience, is neglected by the Turks; and that ſoil muſt be truly fertile which under their ſway can ſupport its inhabitants.

Rivers. Among the rivers of European Turkey muſt firſt be named the

Danube. Danube, which from Belgrade to Orſova divides Servia from the Bannat, a ſpace of near 100 miles; and afterward becomes a Turkiſh ſtream for more than 400, being in ſome places a mile in breadth, and preſenting, if poſſeſſed by an induſtrious people, all the advantages of a Mediterranean ſea.

Maritz. Next perhaps in importance, though very inferior, is the Maritz, or ancient Hebrus, which riſing in a chain of mountains anciently called Hæmus, and running towards the E. and S., falls into the Ægean ſea, after a courſe of about 250 miles. The ſame ſea at the gulph of Salonica receives the Vardari, the ancient Axius, which riſing in mount Scardus, a weſtern branch of the ſame chain, purſues a S. E. courſe of about 200 miles.

Eſker. Two other rivers of ſimilar conſequence flow into the Danube. The Eſker, the ancient Oeſkus, riſes near the ſource of the Maritz, but its

Morava. courſe little exceeds 120 miles; while the Morava, the ancient Margus, runs about 200. The Drin, another conſiderable river, riſes to the north of Albania, and falls into the Save.

Many other ſtreams of claſſical name pervade theſe regions; but they often derive their ſole importance from their hiſtorical and poetical reputation.

Lakes. Budzac and Walachia contain ſome lakes of conſiderable extent, as thoſe around Iſmail, and that to the E. of Surza, which communicates with the Danube, or forms a part of that river. Nor are Albania, and the ſouthern provinces, wholly deſtitute of lakes, but rather of claſſical fame than of geographical importance.

Mountains. The chains of mountains are numerous and extenſive. To the W. of Moldavia and the Bukovine runs N. and N. W. for about 200 miles

part

part of the grand Carpathian chain, anciently called the Baſtarnic Alps, from the Baſtarnæ, an extenſive nation, partly of Gothic and partly of Sarmatic origin. The moſt ſouthern branch of this grand chain, tending S. W. for more than 200 miles, forms the N. and W. boundary of Walachia. Ptolemy here delineates mount Peucé, which ſeems the ſame with the Baſtarnic Alps; while the ſouthern branch may be his Sarmatic mountain; nor do the mountains between Walachia and the Bannat ſeem diſtinguiſhed by any modern appellation, except of particular ſummits, as the Grayſor, the Pietrotza, the Semenek. MOUNTAINS.

On the S. of the Danube appears the grand range of the Hæmus, which Ptolemy repreſents as running from the S. W. to the N. E., while modern obſervations indicate the oppoſite direction; but the recent maps of theſe regions are ſtill very imperfect. D'Anville, in his Ancient Geography, conſiders the Rhodopé as a chain of mountains on the weſtern ſide of ancient Thrace; and the Hæmus as its northern frontier: but this diſtinction is unknown to Ptolemy, who on the contrary places the Rhodopé towards the N. of Thrace, repreſenting it as a branch of the Hæmus. However this be, the chain of the Hæmus is deſervedly celebrated by the ancients, being of great elevation and extent, as appears from the numerous and large rivers which devolve from its ſides. The middle parts of this chain were by the ancients called Scomius and Orbelus; while the Scardus may be conſidered as its furtheſt branch on the weſt. If with D'Anville we place the *Hæmi extrema*, the furtheſt eaſtern point of the Hæmus at Emineh, and thence extend it above Filipopoli and Sofia to the S. of Servia, we ſhall find an extent of more than 400 miles, now known under various names, as Emineh, or Hemineh Dag, perhaps a remnant of the ancient appellation, on the eaſt; Bulkan and Samoco in the middle; Ivan W.; while the Deſpoto Dag branches off to the S. E. and may perhaps be the Rhodopé of the ancients. But while the proper delineation and deſcription of mountains, though ſome of the moſt fixed and important features of nature, and diſtinct and appropriated appellations for their chains and branches, remain groſsly defective in other provinces of European geography, it is not a ſubject of ſurprize that great obſcurity HÆMUS.

ſhould

Mountains. ſhould be found even in the claſſical regions, which now form a part of the Turkiſh empire.*

From the weſtern extremity of the Hæmus ſeem to branch off two other extenſive chains; one running N. W. between Dalmatia on the W. and Boſnia and Servia on the eaſt: while the other paſſing S. forms the mountains of Albania and the W. of Greece. The northern chain begins with the Scardus of the ancients, continued by the Buſſinius and the Albius, an account of which more properly belongs to the Auſtrian dominions. The chain running to the S. has many claſſical appellations, as the Acroceraunian, Pindus, &c. The E. and S. of Greece are alſo crowded with ſmall chains of mountains, and ſolitary hills,

Athos. ſuch as Olympus, Oſſa, Pelius, and others. Mount Athos a detached ſummit in the N. E. is of conſiderable height, but has chiefly attracted obſervation from its ſingular form, ſo much reſembling that of Montſerrat in Spain; and from the many monaſteries and churches on the declivities of its pictureſque pinnacle.

Foreſts. There are conſiderable foreſts in various parts of European Turkey; but travellers have not diſtinguiſhed them by particular deſcriptions.

Botany. While all the Chriſtian countries of Europe have been ſurveyed with more or leſs accuracy either by the independent zeal of their native naturaliſts, or under the honourable patronage of their reſpective governments, the Turkiſh empire, containing the moſt celebrated and beautiful provinces on the face of the earth, has been almoſt wholly excluded from the reſearches of modern botaniſts. That jealouſy of ſtrangers, the reſult of conſcious weakneſs in the government, and of profound ignorance and the meaneſt ſuperſtition in the people, which has uniformly characterized the Ottoman domination, has prevented thoſe viſits to Greece and the provinces ſouth of the Danube which the memory of their ancient glory, and the pure love of ſcience and nature, would have induced. Hence it is that the flora of European Turkey remains in ſo miſerably imperfect a ſtate. The diſtant regions of India, Japan, and Auſtralaſia, the ſultry deſarts beyond the

* Among the few travellers who have viſited parts of mount Hæmus, is Dr. Brown. See his Travels, London, 1673 4to. p. 44, &c. He only obſerves that one of the minerals is talc; and that the chain is ſuppoſed to extend from the Euxine to the Adriatic. As no ſummit of the Hæmus ſeems covered with perpetual ſnow, the elevation cannot be conſiderable.

Cape

Cape of Good Hope, the peſtilential ſwamps of America, and the forlorn expanſe of Siberia, have been penetrated by the indefatigable zeal of the Linnæan ſchool; their animals, minerals, and vegetables have been in a conſiderable degree deſcribed and arranged; while the cradle of civilization, the birth-place of thoſe arts and ſciences that have raiſed the nations of Europe to ſo proud an elevation above the reſt of the world, has been trodden for ages paſt by barbarian feet. The vegetable tribes that clothe the rocks of the Cretan Ida, and ſhade the ſummits of Athos and Oeta, that adorn with their varied tints the vale of Tempe and the plains of Theſſaly, that baſk on the ſunny ſhores of the Ægæan, or riſe in ſtately luxuriance on the banks of the majeſtic Danube, ſucceed to each other, generation after generation, unknown and unregarded. A few haſty gleanings, chiefly from the maritime parts, have been brought home by travellers; but of the botany of the interior, eſpecially of thoſe provinces which lie between the Danube and the Archipelago, we are almoſt wholly ignorant. Botany.

The foreſts of Greece, the Greek iſlands, and the provinces bordering the Archipelago to the north, conſiſt of the common and yew-leaved fir, the larch, the cedar, the ilex, the kermes oak, the common oak, the oriental plane-tree, the maple, the ſycamore, the walnut, the cheſtnut, and the beech. The principal fruit-trees are the olive, *olea Europæa*, conſiderable foreſts of which, mixed with the broad-leaved myrtle, *myrtus communis*, adorn the ſhores of Crete and Attica; the orange, *citrus aurantium*; the fig, *ficus carica*; the vine, *vitis vinifera*; the piſtachia tree, *piſtachia lentiſcus*; the maſtich tree, *piſtachia terebinthus*; the mulberry, *morus niger*; and the pomegranate, *punica granatus*. Of the ſhrubs and ſmaller trees the moſt worthy of notice are the bay-tree, *laurus nobilis*; the laurel, *prunus lauroceraſus*; two kinds of *arbutus*, the *a. unedo* and *a. andrachne*; the cypreſs, *cupreſſus ſempervirens*; the roſe laurel, *nerium oleander*; and the caper buſh, *capparis ſpinoſa*. A large proportion of the ſoil in Greece and the Greek iſlands being calcareous, either of the purer kinds as marble and limeſtone, or of the mixed, as effervescent trap, a large proportion of the Greek flora in its preſent imperfect ſtate conſiſts of thoſe plants that are peculiar to limeſtone diſtricts; the lower acceſſible ridges in Crete are principally marble.

Botany. marble and other calcareous rocks, hence this iſland has always been celebrated for its vegetable productions; of which the following are the chief, and all of them indicative of a calcareous ſoil: *ſtachys Cretica*, Cretan woundwort; *acanthus carduifolius*, thiſtle-leaved acanthus; *Cichorium ſpinoſum*, thorny ſuccory; *origanum Creticum*, Cretan origany; *origanum Dictamnus*, Cretan dittany; *aſtragalus tragacantha*, tragacanth vetch, from which the gum of this name is procured; *ſalvia pomifera*, apple ſage; *ciſtus ladaniferus*, ladanon ciſtus; an elegant ſhrub, from the leaves and tender ſtalks of which the fragrant gum ladanon exudes; this is collected by whipping the plants with leathern thongs to which the gum adheres, and off which it is ſcraped from time to time.

A few other plants remain to be mentioned, which are natives of the Archipelago and the vicinity of Conſtantinople. Theſe are *goſſypium herbaceum*, herbaceous cotton; *dianthus fruticoſus*, ſhrubby pink; *ſcrophularia lucida*; *catananche Græca*; *achillæa Ægyptiaca*; *aſparagus aphyllus*; *lichen parellus*, from which the beautiful crimſon pigment called archil is prepared; *origanum Tournefortianum*; *cheiranthus farſetia*; *campanula laciniata*; *verbaſcum ſinuatum*; *borago orientalis*; and *ſymphytum orientale*.

Zoology. The zoology of European Turkey preſents few peculiarities. The jackal, frequent in Africa and Aſia, is not unknown in theſe regions; and among the beaſts of burden muſt be claſſed the camel. The Turkiſh horſes are celebrated for ſpirit and form; and thoſe of Walachia deſerve particular praiſe. Of cattle and ſheep there is little deficiency, but the particular breeds or qualities have been little explained. The ſheep, diſtinguiſhed by the name of Walachian, have ſpiral horns of ſingular elegance; but the fineneſs of the fleece would be a more uſeful diſtinction.

Mineralogy. The mineralogy of theſe provinces is alſo a barren field, for the indolence and ignorance of the Turks have generally neglected this branch of opulence; though from the mines in the adjacent regions of Hungary and Tranſylvania, and from the ancient accounts, there would be room to expect great mineral treaſures. The gold mines of Philippi, about 80 miles to the eaſt of Salonika, in the time of Philip of

Macedon produced yearly about 1000 talents, 2,880,000l. ſterling: and ſilver mines were found in Attica, and other quarters. MINERALOGY.

The mineral waters are little known or celebrated; and the natural curioſities in the northern parts, and around mount Hæmus, remain undeſcribed. Among thoſe in the ſouth may be named mount Athos, which, as already mentioned, riſes in a conical ſummit, about 3300 feet, groteſquely adorned with churches and monaſteries. The grotto of Antiparos, one of the Cyclades to the weſt of Paros, has been well deſcribed by Tournefort, and recently by an ingenious female traveller.[1] The iſle of Antiparos is a rock of fine marble, about ſixteen miles in circumference. In the ſouthern part of this iſle, about a mile and a half from the ſea, riſes a rugged cavern with ſome ancient inſcriptions. After proceeding about twenty paces appears a dark and low paſſage, whence the traveller, being provided with lights, deſcends by a rope, and afterwards by a ladder placed by the ſide of deep abyſſes. The path now becomes more eaſy, and conducts to another ſteep precipice, which is deſcended by another ladder. After much fatigue, and ſome danger, the traveller at length arrives in the grotto, which is ſuppoſed to be about 900 feet from the firſt opening.[2] Tournefort eſtimates the height of the grotto at about 40 fathoms. The ſtalactitic marble hangs from the roof, in the moſt elegant and pictureſque forms: and on the floor are large maſſes of ſtalagmite, browniſh and leſs pure, produced by the liquified ſtone dropping from above; but Tournefort, a botaniſt, very naturally ſuppoſes that they vegetate.[3] A great diſtinction between this grotto, and others of a ſimilar kind in England and other countries, is the purity of the material, being marble of a ſnowy whiteneſs, and the fineſt calcareous ſpar. The marble of Paros has been known and celebrated ſince the claſſical times, as the moſt pure that the ſculptor can employ; but ſome prefer that of Carrara as of a finer and cloſer grain, and more obedient to the chiſel, the Grecian having a large cryſtalline grain, apt to ſlit off more largely than required. Mineral Waters. Natural Curioſities.

[1] Lady Craven.

[2] But this muſt include all the windings, for Lady Craven computes the direct diſtance at only 300 feet, p. 247.

[3] Vol. i. 148.

ISLANDS BELONGING TO TURKEY IN EUROPE.

The numerous iſlands in the Archipelago are by geographers conſidered as belonging to Europe; except a few which approach the Aſiatic ſhore, as Mytilene, Scio, Samos, Cos, and Rhodes.

The claſſical iſlands of ancient Greece have been ſo repeatedly deſcribed, that little more than an enumeration may ſuffice. The largeſt is that of Crete, or Candia, which is about 180 Britiſh miles in length, by 40 at its greateſt breadth. A chain of high mountains, called the White Mountains from the ſnow, pervades a great part of its length.[1] The inhabitants are vigorous, and robuſt, and fond of archery.* This iſle abounds with cattle, ſheep, ſwine, poultry and game, all excellent; and the wine is balmy and luſcious. The dogs of Crete are ugly; and ſeem to be between the wolf and the fox. The ſiege of Candia by the Turks, in the middle of the ſeventeenth century, is remarkable in modern hiſtory, as having continued for 24 years, 1646--1670. This iſland had before flouriſhed under the Venetians.

Next is Negropont, about 100 Britiſh miles in length by 20 in breadth; a large and important iſland, which alſo belonged to the Venetians to a late period.*

The other iſles are generally of a diminutive ſize; and were divided by the ancients into ſeparate groupes, of which the Cyclades were the moſt memorable; while the Sporades approached the Aſiatic ſhore. Other chief names are Lemnos, Skyro, and Andro. It is unneceſſary to give a tedious repetition of the births of illuſtrious claſſics, and other trivial particulars concerning theſe iſlands; and the grotto of Antiparos is deſcribed in the account of natural curioſities. It muſt not however be omitted, that in the year 1707 a new iſland aroſe from the ſea, with violent volcanic exploſions, near Santorine, and about a mile in diameter ‡ The other iſlands ſhall be briefly deſcribed under their proper diviſion of Aſiatic Turkey.

[1] Tournefort, i. 69. &c.

* The iſles of Corfou, Cefalonia, and Zante, on the other ſide of Greece, were on the fall of Venice ſeized by the French; but now conſtitute an independant republic, under the protection of Ruſſia; a curious experiment on the genius of modern Greece.

‡ The curious reader may find a long detail of this ſingular event in Payne's Geographical Extracts, p. 252 to 256.

HOLLAND.

CHAPTER I.

HISTORICAL GEOGRAPHY.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

NAMES.

THE SEVEN UNITED PROVINCES were, in ancient times, chiefly poſſeſſed by the Batavi, a people highly celebrated by Tacitus: but the boundaries being modern, there is no ancient appellation which particularly denotes this country. It is commonly ſtyled the republic of Holland, from the name of a chief province; ſo called from the German word *Hohl*, correſponding with the Engliſh word hollow, and implying a concave or very low country. The people are called Dutch from the German *Deutſch* or *Teutſch:* but *Deutſchland* properly ſignifies the vaſt extent of Germany itſelf, though by the Engliſh reſtricted to a ſmall portion uſing a dialect of the German language.

Extent.

Theſe provinces extend, from the N. of Groningen, to the ſouthern boundary along Auſtrian Flanders and Brabant, about 150 Britiſh miles; and in breadth, from what is called the North Sea to the circle of Weſtphalia, about 100 Britiſh miles. The number of ſquare miles is computed at 10,000.

Original Population.

The original population appears to have been Celtic: but when the Romans conquered this country the chief inhabitants were the Batavi,

Original Population.

the moſt northern people of Belgic Gaul, and inconteſtibly a German or Gothic progeny. The Franks paſſed the Rhine to the ſouth of the Batavi; who appear to have been ſecure in their marſhes and iſlands, till the Friſians, the next adjacent people in the north, in the ſeventh century extended themſelves even down to the Scheld. In the eighth century the Friſians were ſubdued by the Franks under Charles Martel; but the Friſians and Franks may be regarded as mingled in the population with the ancient Batavians.[1]

Progreſſive Geography.

The progreſſive geography of this region becomes curious and intereſting, from the ſingular phenomenon of the increaſe of the ſea. Upon inſpecting the accurate maps of the ancient and middle geography of Gaul by D'Anville, it will be perceived that the Rhine divided itſelf into two grand branches at Burginaſium or Schenk, about five miles N. W. of the Colonia Trajana, now an inconſiderable hamlet called Koln near Cleves. The ſouthern branch joined the Meuſe at the town of Moſa or Meuvi; while the northern paſſed by Durſtadt, Utrecht, and Leyden, into the ocean. From the northern branch was led the canal of Druſus, which originally joined the Rhine to the Iſſil, a river that flowed into a conſiderable inland lake called Flevo, now a ſouthern portion of the Zuyder Zee. This canal of Druſus being neglected, and left to the operations of nature, the Rhine joined the Iſſil with ſuch force that their conjunct waters increaſed the lake of Flevo to a great extent; and inſtead of a river of the ſame name, which ran for near 50 Roman miles from that lake to the ſea, there was opened the wide gulph which now forms the entrance. This northern and chief mouth of the Rhine was, at the ſame time, weakened and almoſt loſt by the diviſion of its waters, and even the canal of Druſus was afterwards almoſt obliterated by the depoſition of mud in a low country, in the ſame manner as ſome of the ancient mouths of the Nile have diſappeared in the Delta of Egypt.

The ſouthern branch of the Rhine, which flowed into the eſtuary of the Meuſe, as above mentioned, was anciently called Vahalis, a name retained in the modern Waal; the ancient iſle of the Batavi being included between the two branches of the Rhine, and thus extending

[1] D'Anville Etats form. en Europe, p. 26.

about

about 100 Roman miles in length by about 22 at the greateſt breadth. The eſtuaries of the Meuſe and the Scheld have alſo been opened to great inroads from the ocean: and the latter in particular, which anciently formed a mere delta, with four or five ſmall branches, now preſents the iſlands of Zealand, and the moſt ſouthern of thoſe of Holland, divided by wide creeks of the ſea. This remarkable irruption is ſuppoſed to have happened at the time that the Goodwin Sands aroſe, by the diffuſion and conſequent ſhallowneſs of the water. Theſe great changes may be conceived to have made a ſlow and gradual progreſs; and none of them ſeem ſo ancient as the time of Charlemagne. Some of them are ſo recent as the fifteenth century; for in 1421 the eſtuary of the Meuſe, or Maeſe, ſuddenly formed a vaſt lake to the S. E. of Dort, overwhelming 72 large villages, with 100,000 inhabitants, who periſhed in the deluge.[2] Progreſsive Geography.

By a ſubſequent change the Rhine was again ſubdivided; and a chief branch fell into the Leck, which joins the eſtuary of the Meuſe between Dort and Rotterdam, and muſt now be regarded as the northern mouth of that noble river; while the Vahalis or Waal continues to be the ſouthern: both branches being loſt in a comparatively ſmall ſtream the Meuſe. The leſs important variations in the geography may be traced with ſome preciſion in the Francic hiſtorians, and other writers of the middle ages.

Among the chief hiſtorical epochs may be numbered, Hiſtorical Epochs.

1. The actions of the Batavi in the Roman period, from the firſt mention of that nation by Julius Cæſar.

2. The conqueſt by the Friſians; and afterwards by the Danes, and by the Franks.

3. The countries watered by the Meuſe and the Rhine were for a long time divided into ſmall earldoms; but in the year 923 Theoderic or Diedric, brother of Herman duke of Saxony, and of Wickman earl of Ghent, was appointed count of Holland by Charles the Simple king of France, and the title became hereditary. Zealand and Friſland

[2] Cluver. 96. Guicciardini, 271. Some authors arbitrarily aſſign theſe changes to violent tempeſts, A. D. 860; others to 1170. Guicciardini p. 13. A Zealandic chronicler, quoted by the ſame author, 346, ſays that the iſlands of Zealand were formed by violent tempeſts in the year 938, a date which ſeems to deſerve the preference.

Historical Epochs.

were included in the donation. The county of Gelderland on the E. was erected by the emperor Henry IV in 1079; and became a duchy in 1339. Utrecht was ſubject to its powerful prelates, who had frequent conteſts with the earls of Holland.

4. Florence III, who ſucceeded in 1187, carried on numerous wars againſt the Flemings and Friſians; and died at Antioch, in 1189, on an expedition to the Holy Land. He married Ada, grand daughter of David I king of Scotland, a country which had early commercial connexions with Holland. In 1213 William I earl of Holland formed a league with John king of England, Ferrand earl of Flanders, and the emperor Otho, againſt France; but William was taken priſoner at the famous battle of Bouvines.

5. William II earl of Holland was elected by a party emperor of Germany A. D. 1247; but his claim was not crowned with ſucceſs. John earl of Holland, A. D. 1296, wedded Elizabeth daughter of Edward I of England. Frequent conteſts appear between the earls of Holland and thoſe of Flanders, concerning the poſſeſſion of the iſlands of Zealand. Philipina, daughter of William III earl of Holland, is married to the Prince of Wales, afterwards Edward III of England, a princeſs worthy of an heroic huſband. This king afterwards conteſted the earldom of Holland with Margaret his ſiſter in law. Jacquelin the heireſs of Holland in 1417 wedded John IV duke of Brabant; but her uncle John of Bavaria, who had reſigned the biſhoprick of Liege in the hopes of eſpouſing her, conteſted the ſucceſſion. A kind of anarchy following, Jacquelin went to England, where ſhe married in 1423 Humphry duke of Glouceſter; and this marriage being annulled by the pope, ſhe wedded in 1432 Borſelen ſtadtholder of Holland; and the next year was forced to reſign her ſtates to Philip the Good duke of Burgundy.

6. Holland, with other large poſſeſſions of the houſe of Burgundy, fell by marriage to the houſe of Auſtria.

7. Holland and ſome inferior provinces revolt from the tyranny of Philip II in 1566; and in 1579 formed the famous union of Utrecht in ſtrict alliance. The hiſtory of this intereſting ſtruggle has been depicted

depicted in glowing colours by the celebrated Grotius, who in this work ſometimes rivals the acute brevity of Tacitus. Historical Epochs.

8. At the end of that century the Dutch had eſtabliſhed colonies at the Cape of Good Hope, and in the Eaſt Indies; and ſettlements were afterwards gained in S. America. During the ſeventeenth century they rivalled the Engliſh in the empire of the ſea; and greatly exceeded them in commercial advantages. Their power began ſomewhat to decline after the obſtinate naval conflicts in the time of Charles II. In 1672 Louis XIV invades Holland; and Amſterdam is only ſaved by opening the ſluices.

9. William ſtadtholder of Holland aſcends the throne of England 1688; and a ſtricter intercourſe prevails between the countries, Holland becoming the grand channel of the commerce of England with the continent.

10. The ſtadtholderate declared hereditary 1747. The war in 1756 opening great connexions between Holland and France, a French party began to form in the country, which oppoſed the ſtadtholder, who was ſupported by the Engliſh. In 1780 a war aroſe between Great Britain and Holland, which cloſed in 1784, after expoſing to Europe the decline and weakneſs of the United Provinces, ſtill further diſplayed by the entrance of the duke of Brunſwick in 1788, who may be ſaid to have ſubdued them without a blow.

11. The Dutch having joined the coalition againſt the French, their country fell a prey to the invaders, during the hard froſt of the winter 1794-5; and the ſtadtholder took refuge in England in 1795. Though a ſeparate government continue, yet the United Provinces muſt be conſidered as ſubject to France, which intends to incorporate the parts S. of the Rhine. The Dutch fleet has ſince been nearly annihilated by the Engliſh.

The ancient monuments of the United Provinces are far from being numerous or intereſting. The chief remain of the Roman period is the ruined tower near Catwick, about ſix miles N. W. from Leyden, at the ancient mouth of the Rhine. This place is commonly called Brittenburg, and is ſuppoſed by ſome to have been erected by Caligula. An inſcription evinces that it was reſtored by Severus. The Dutch Antiquities.

ANTIQUITIES.

antiquaries have publiſhed ſeveral inſcriptions, engraved ſtones, little images, and other curioſities found in theſe ruins.[3] Some inſcriptions have alſo been diſcovered in the territory of Nimeguen, and a Roman mile ſtone in the vicinity of Derft. In the middle of Leyden, upon an artificial hill, ſtands a round tower, fabled to have been built by Hengiſt who firſt led the Saxons to England. Among the antiquities of the middle ages may be particularly named the church of Utrecht, with a tower of great height, commanding as it were a map of the ſurrounding country, and worthy of the great power of the ancient biſhops of that ſee. But Amſterdam itſelf, and moſt of the other cities, are comparatively of recent foundation, and contain but few monuments even of the middle ages.

3. Junii Batavia, p. 200. Scriverius 176.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenues.—Political Importance and Relations.

Religion. THE proteſtant religion, in the Calviniſtic form, prevails through the United Provinces; and the treaty of Union 1579 bears that it ſhall be maintained. The ſtates of Holland, in 1583, propoſed that no other form of worſhip ſhould be tolerated; but this reſolution was wiſely rejected: and every religion is permitted, on condition that it do not oppoſe the fundamental laws, or teach any doctrines ſubverſive of the ſtate; yet employments of any conſequence can only be filled by proteſtants.[1]

Eccleſiaſtic Geography. The eccleſiaſtical perſons are conſidered as divided into four ranks, profeſſors at univerſities, preachers, elders, and deacons: and the government of the church is adminiſtered by conſiſtories, claſſes, and ſynods. The conſiſtory is the loweſt court, commonly conſiſting of the clergy and elders of a particular town, while a claſs conſiſts of deputies from ſeveral, and is commonly aſſembled three times in the year, a part of its duty being to viſit the churches, and watch over the conduct of the clergy. The ſynods are either provincial or national; the firſt being aſſembled every year, while the national ſynod is only ſummoned on the moſt important occaſions, when eſſential doctrines are to be diſcuſſed, and the laſt was that of Dort 1618. The provincial ſynods are:

	Claſſes.	*Preachers.*
1. That of Gelderland - - - - - - - -	9	285
2. That of Southern Holland - - - - -	11	331

[1] Buſching, xiv. part ii. p. 16.

Ecclesiastic Geography.

	Claſſes.	*Preachers.*
3. That of Northern Holland - - - - -	6	220
4. The congregation of Zealand - - - - -	4	163
5. The Synod of Utrecht - - - - - - -	3	79
6. That of Friſland* - - - - - - - - -	6	207
7. That of Ober Yſſel - - - - - - - -	4	84
8. That of Groningen, the city and low countries - - - - - - - - - -	7	161
9. That of Drent - - - - - - - - - -	3	40
Total	53	1570

There are, beſides, numerous Walloon churches, ſcattered through the provinces, who hold a kind of ſynod twice a year, compoſed of deputies from their own ſect. The Roman Catholics are ſuppoſed to have 350 churches, ſerved by 400 prieſts, excluſive of ſome in the conquered territory. The chief other ſects are the Lutherans, the Remonſtrants, or Arminians, who have forty-three teachers, Anabaptiſts, and Jews, and a few Quakers.

Government.

The United Provinces were compoſed of ſeven republics, each retaining its own ſtates, conſiſting of nobles, and burgeſſes. The provincial ſtates ſend deputies to the ſtates-general, each republic having only one vote, though its deputies may be numerous. But the ſtates-general ſeldom exceed 26 perſons, who uſed to aſſemble in a ſmall room at the Hague, enjoying the right of peace and war, appointing and receiving ambaſſadors, naming the Greffier, or ſecretary of ſtate, and all the ſtaff officers.[2] The council of ſtate directs the army and finances; and what is called the council of deputies conſiders the troops and finances of each province. The grand penſionary of Holland preſides in the provincial ſtates, and council of deputies of that country. The Stadtholder was originally a kind of dictator, appointed, from the

* That is Friſland proper. Weſt Friſland is to the north of Holland on the weſt of the Zuyder Zee. Eaſt Friſland to the eaſt of Groningen. See Nugent, ii. 381.

[2] Radcliffe's travels, i. 53. Buſching, xiv. p. 40, &c.

neceſſity

neceſſity of the times, to conduct the emancipation of the ſtate. The neceſſity having vaniſhed, this office became of dubious authority, till William III, in 1672, procured it to be declared hereditary. As he died without children the ſtates ſeized this power till 1747, when, the French penetrating into Dutch Flanders, the rank was reſtored to William IV, and again became hereditary, though in recent times frequently conteſted. GOVERNMENT.

Juſtice is adminiſtered according to the local cuſtoms and ſtatutes of each province and city, the ordinances of the ſtates general, and in defect of all theſe the Roman code. Each province has a ſupreme court, to which appeals lie from the lower court of Juſtice, except in criminal cauſes, in which the Stadtholder might pardon, by the conſent of the preſident and ſuperior court of each province, ſave in caſes of murder and other flagrant crimes. LAWS.

The population of the United Provinces has been recently computed at 2,758,632, and the extent of the territory in ſquare miles being ſuppoſed 10,000, there will be 275 for each mile ſquare. The population of Holland, the chief province, is calculated at 980,000. POPULATION.

The Dutch being, for a conſiderable time, the chief maritime power in Europe, their colonies were numerous; beſides ſome ſettlements on the coaſt of Hindoſtan, and an important eſtabliſhment in Ceylon, they held, and ſtill retain Batavia in the iſland of Java. But the Cape of Good Hope, and other conſiderable eſtabliſhments have fallen into the hands of the Engliſh, and the Dutch colonies may be conſidered as nearly annihilated. COLONIES.

The army was computed at about 36,000, but it is now incorporated with that of France. The navy, which uſed to conſiſt of forty ſhips of the line, has by the events of the laſt war almoſt totally diſappeared. ARMY.

The revenue was about three millions and a half ſterling, but was greatly exceeded by the expenditure; ſo that the national debt was computed at about 130,000,000l. ſterling: but 2,800,000l. were annually received as the intereſt of loans to foreign power. REVENUE.

Political Importance, &c.

The political importance and relations of the United Provinces are at preſent completely immerged in thoſe of France. Any conſequence among the European powers can ſcarcely be reſumed, except by the hopeleſs union with the other Netherlands: but the moſt natural and neceſſary political relations are with England, under whoſe protection they might ſtill have aſpired to lucrative commerce.

CHAPTER III.

CIVIL GEOGRAPHY.

Manners and Cuſtoms.—Language. — Literature. — Education. — Univerſities.— Cities and Towns.—Edifices.—Inland Navigation.—Manufactures and Commerce.

MANNERS AND CUSTOMS.

A STRANGER viſiting Holland is ſurprized at the extreme cleanlineſs obſervable in the houſes and ſtreets, even hamlets inhabited by poor fiſhermen, diſplaying a neatneſs and freſhneſs, which forms a ſtriking contraſt with the ſqualid appearance of the German villages. The air being always moiſt, and commonly cold, the Dutch dreſs is calculated for warmth and not for elegance. Yet the people are fond of ſplendid exhibitions, and remarkably ſubmiſſive to their ſuperiors.[1] The Dutch are of a phlegmatic temperament; and their courage at ſea is rather obſtinacy than ardour; while from the ſame cauſe their labour is rather ſlow perſeverance, than impetuous ſtrength like that of the Engliſh. In former times their knowledge was chiefly reſtricted to two channels; affairs of ſtate, on which even the vulgar would converſe with propriety; and the arts of getting money. But, as uſual in the decrepitude and fall of a ſtate, as well as in the old age of the individual, the miſerable love of money at length ſupplanted every noble thought and generous feeling. This ſtriking characteriſtic has impreſſed every ſpectator, from the days of Ray the naturaliſt, who viſited Holland in 1663, even to the preſent hour. A late amiable traveller obſerves that "the infatuation of loving money not as a mean but as an end, is paramount in the mind of almoſt every Dutchman, whatever may be his other diſpoſitions and qualities; the addiction to it is fervent, inveterate, invincible, and univerſal, from youth to the feebleſt old age."[2]

[1] Ray, 53. [2] Mrs. Radcliffe, i. 98.

Manners and Customs.

The Dutch are commonly low in ſtature, and the women are taller than the men. The ſex having generally few perſonal advantages, they are induced to make advances, which impreſs foreigners as immodeſt and improper. The Dutch dreſs is little affected by faſhion, and the women retain the old broad hat, while that of the men is narrow and compact; nor has the ancient female affection for gold and jewels been eradicated by the avarice of fathers and huſbands. The uſe of ſalt and high-ſeaſoned food is perhaps enforced by the humid climate, as well as that of ſpirituous liquors. Beſides the uſual games the chief amuſements were the theatres, and the tea-gardens. The opulent merchants delighted in their villas, thickly planted among the numerous canals; and the ſmallneſs of the gardens was compenſated by the richneſs of the miniature ſelection, in which perhaps one tulip root might coſt 50 guineas. The Dutch perſeverance is alſo diſplayed in the improvement of hyacinths, and other flowers, cultivated with great attention becauſe there was not room for the grander vegetables. In the winter ſkating was alſo a favourite amuſement, and the canals were crowded with all ranks, from the ſenator to the milk maid with her pail, and the peaſant with his eggs. But the chief amuſements, in ſo moiſt a climate, were under the ſhelter of the domeſtic roof, in large and expenſive collections of paintings and prints, which alſo became an article of commerce and avarice.

Language.

The Dutch language is a dialect of the German; and the Lord's Prayer runs in the following terms:

Onſe Vader die daer zijt in de Hemelen. Uwen Naem word geheylight. U Rijcke kome. Uwen Wille ghеſchiede op der Aerden, gelijck in den Hemel. Onſe dagelijckt Broodt gheeft ons heden. Ende vergheeft ous onſe Schulden ghelijck wy oock onſe Schuldenaren vergeven. Ende en leyt ons niet in Verſoeckinge. Maer verloſt ons vanden Booſen. Amen.

Literature.

The literature of the Seven United Provinces is more reſpectable than that of the other Netherlands. Not to mention the ancient chronicle of the church of Utrecht, written by Beka in the thirteenth century, and other eccleſiaſtical productions of the middle ages, the great Eraſmus, the reſtorer of letters in Weſtern Europe, was born at Rotterdam in 1467. Johannes Secundus, or Hans de Twede, one of the

the moſt elegant of modern Latin poets, was a native of the Hague, as the renowned Grotius was of Delft. Boerhaave, the celebrated phyſician, was born at Voorhoot near Leyden. Dort produced Paul Merula, a diſtinguiſhed antiquary, who at the beginning of the ſeventeenth century firſt diſcriminated the real origins of European nations. Adrian Junius, or Yung, who explored the antiquities of his native country, was of Hoorn on the Zuyder Zee. Among other eminent names may be mentioned Meurſius of Lauſden, Douſa of Leyden, Heinſius of Ghent, and the younger Voſſius, for the father was of Heidelberg. Hoogeveen of Leyden died in 1794, after having acquired the reputation of being the firſt Greek ſcholar in Europe. This liſt might be eaſily encreaſed; but it ſhall ſuffice further to obſerve that the native literature has not been entirely neglected, ſince the time of Catz the poet, a native of Zealand, who flouriſhed in the middle of the ſeventeenth century; and that ſeveral works of utility and amuſement have been publiſhed in the Dutch language, which ought to ſhare with the German the attention of lovers of literature. LITERATURE.

The mode of education purſued in theſe provinces ſeems to have been greatly inferior to that uſed in Scotland, a country enjoying an eccleſiaſtic government ſomewhat ſimilar. The Dutch youths being chiefly allotted to a ſeafaring life, there was not indeed that opportunity for numerous parochial ſchools, and conſequent diffuſion of common knowledge, which took place in Scotland. The moſt large and celebrated Latin ſchools were at Rotterdam, Breda, Middleburg, Groningen, &c. The univerſities are five; Leyden, Utrecht, Harderwyck, Franecker, and Groningen; with two inferior colleges at Amſterdam and Deventer. There is an academy of ſciences at Haarlem. Education. Univerſities.

Amſterdam, the chief city of Holland, upon the ſmall river Amſtel, is firſt mentioned in the thirteenth century; but in the fourteenth was reckoned among the commercial towns of Europe. About the middle of the ſeventeenth century, during the higheſt proſperity of the republic, it was enlarged by about one half. The haven is not diſtinguiſhed by natural advantages, but has been improved and ſecured by art: and the wide foreſt of maſts impreſſed every traveller with amazement. The population is computed at about 212,000. The ſtreets Cities and Towns. Amſterdam.

are

Cities and Towns.

are generally narrow, and the canals feculent. The houſes have the common air of neatneſs peculiar to thoſe of the Dutch. The chief edifices are the ſtate houſe, founded on piles at an immenſe expence; the exchange, and the poſt office; but ſome ſtreets along the chief canals diſplay houſes of uniform grandeur. Some agreeable walks occur in the interior of the city; but the environs are chiefly viſited by water; yet to the S. there is an agreeable road to Ouderkirk through pleaſant gardens and groves.[3]

Leyden.

Leyden is eſteemed the next city in population, containing about 50,000 ſouls. It is the Lugdunum Batavorum of antiquity, and is diſtinguiſhed by its univerſity. Here the ancient Rhine almoſt expires in a number of ſmall channels, which are paſſed by ſo many bridges, that the number has been computed at more than one hundred. The meadows and gardens around Leyden are remarkably productive, and there is a daily intercourſe, by canals, with the other chief cities and provinces. The fair is ſtill much frequented; but the univerſity has declined under ſome commercial regulations, for the Dutch always wiſh to oblige ſtrangers to leave as much money behind them as poſſible.[4]

Rotterdam.

Next in population is Rotterdam, of about 48,000 people. There is a noble quay, with houſes as handſome as any in the ſquares of London; and the great length of the ſtreets is characteriſtic of Dutch cities, and even towns; yet they are generally narrow, and the foot pavement is only diſtinguiſhed by a clean line of bricks.[5] In the market place ſtands the well-known ſtatue of Eraſmus. The canals, terraces, and draw-bridges are engaging objects; but there is little of real elegance, and the Dutch idea of beauty is what we ſtyle prettineſs. Yet where this prettineſs leads to extreme neatneſs, it is preferable to ſqualid grace.

Haarlem.

Haarlem is computed to contain 40,000 ſouls; and, like Leyden, is fortified by old brick walls, the modern plan of earthen barriers, in which the cannon balls ſink innoxious, being little known till towards the middle of the ſeventeenth century. The great church is eſteemed

[3] Radcliffe, i. 108. [4] Ib. i. 89. [5] Ib. i. 16.

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the largeſt in the province of Holland; but the celebrated organ is more remarkable for power than ſweetneſs. The houſe of Lawrence Coſter, whom the Dutch fondly aſſert to have been the inventor of the grand art of printing, ſtands near the church; but impartial enquirers have decided the queſtion in favour of Mentz. Cities and Towns.

The Hague is only eſteemed a village, though the inhabitants be computed at 36,000. The court, or palace, contains ſeveral chambers allotted to the different branches of government, beſides the apartments of the Stadtholder. The ſtates general met in a room which contained twenty-ſix chairs, for the uſual number of the members.[6] The cabinet of natural hiſtory has been carried to France, and probably the moſt curious books and pictures. It is aſſerted that the Hague contains more magnificent houſes, than occur in the like ſpace in any city of northern Europe. On the N. of the town is a noble grove, with alleys of oak and beech, leading to the Maiſon du Bois, a palace of the Stadtholder; but the pleaſanteſt road is that to Schevening, a village on the ſhore two miles to the N. W. through four rows of lofty elms. The Hague is diſtinguiſhed by its pleaſant ſituation, and tranquil grandeur. Hague.

Middleburg in Zealand is ſuppoſed to contain 30,000 inhabitants; and it has a large town houſe, decorated with the ſtatues of the ancient earls and counteſſes of Holland. It was not only the ſeat of the provincial ſtates, but alſo of the council of Flanders, preſiding over part of that country acquired by the Dutch. Utrecht, Delft, Dort, and Groningen, are ſuppoſed each to contain about 20,000 inhabitants: and among the inferior cities may be named Maeſtricht, the moſt ſouthern of the Dutch poſſeſſions, ſituated on the river Maeſe, or Meuſe, 18 Britiſh miles N. W. of Aken, or Aix la Chapelle, and ceded to the Dutch, after repeated conteſts, by the peace of Nimeguen 1678: in the vicinity are vaſt ſtone quarries ſupported by numerous pillars, which might ſhelter thouſands from the horrors of war. Maeſtricht.

To enumerate the canals of the United Provinces would be infinite, for they equal the roads in other countries; and the advantage muſt be the more perceived during the interruption of maritime commerce, by Inland Navigation.

[6] Radcliffe, i. 49.

Inland Navigation.

the increaſe of the inland trade with Germany, the ſouthern Netherlands, and France.

Manufactures and Commerce.

The chief manufactures of Holland are linens, many of which however are made in Sileſia, pottery, and painted tiles, eſpecially at Delft; leather, wax, ſnuff, ſugar, ſtarch, paper, beſides ſome of woollen, cotton, and ſilk.[7] But the moſt precious branch of commerce conſiſted in ſpices and drugs, brought from the ſettlements in the E. Indies; and the Dutch E. India company was, for a conſiderable time, the greateſt mercantile firm in Europe. The fiſhery in the Northern ſeas, and even on their own and the Engliſh coaſts, was alſo an object of great commercial importance. Latterly perhaps the chief advantage was derived from Holland being the grand depoſit of commerce between Great Britain and the continent, particularly Germany and France. The inland trade with Germany, by the canals and the Rhine, is almoſt the only branch which has eſcaped the ravages of war, and may even now be regarded as conſiderable. Of this the moſt remarkable feature conſiſted in the vaſt floats of timber, which arrived at Dort from Andernach, and other places on the Rhine, whoſe copious ſtream received the trees of the German foreſts. The length of theſe rafts is from 700 to 1000 feet, the breadth from 50 to 90; and 500 labourers direct the floating iſland, which is crowned with a village of timber-huts for their reception. The navigation is conducted with the ſtricteſt regularity; and on their arrival at Dort the ſale of one raft occupies ſeveral months, and frequently produces more than 30,000l. ſterling.[8] The other branches of inland traffic are numerous: and the Rhine may be ſaid to ſupply Holland with inſular advantages, ſecure from the deſtructive inroads of maritime war.

[7] Marſhal, vol. i 225—255.

[8] Radcliffe, ii. 114.

CHAPTER IV.

NATURAL GEOGRAPHY.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

CLIMATE AND SEASONS

HUMIDITY and cold are the chief characteriſtics of the climate of the United Provinces. The general face of the country is that of a large marſh which has been drained; the canals, and even the ſea, looking pale and diſcoloured by mud; but the numerous and important cities and towns excite admiration, and the moſt dignified ideas of the wonderful powers of induſtry, which ſeems to have ſelected a chief ſeat amidſt the greateſt natural diſadvantages. And even among theſe marſhes the eye is relieved by the groves, gardens, and meadows; and to the E. of Utrecht the woods and hills gently ſwell towards Germany. Yet the eaſt even of Dutch Brabant is disfigured by the large moraſs of Peal, extending about 30 Britiſh miles in length: Over-Yſſel, ſo called from its weſtern boundary of the Iſſel, which received the canal led by Druſus from the Rhine, is almoſt wholly compoſed of enormous marſhes and heaths; and the moraſs of Bourtang rivals that of Peal in extent. The northern provinces of Friſland and Groningen, (parts of the ancient Friſia which included alſo the principality of E. Friſland now belonging to Pruſſia,) preſent towards the S. and S. E. extenſive heaths; while the parts towards the ſea rival the moraſſes of Holland. Thus the whole country may be ſaid to diſplay an intimate combination of land and water; and the few elevations commonly conſiſt of barren ſand.*

* It is ſomewhat remarkable that the Zuyder Ze ſhould be frequently frozen. Nugent, ii. 385; probably owing to the ſhallowneſs of its waters.

Soil and Agriculture.

The agriculture of ſuch provinces cannot be expected to be conſiderable, the land being moſtly under paſturage, except a few crops of madder, and tobacco, which are cultivated with great predilection.[1] In the province of Gelderland, and the barony of Breda, there were waſte grounds of ſome extent, over-run with broom and heath, the ſoil generally a black ſand, which ſeem to have been neglected as approaching to the frontier. The paſturages in the N. of Holland eſpecially thoſe of Bemſter, and in Friſland, ſupplied ſuch quantities of excellent butter, as to become a ſtaple article of commerce. The cows ſeem to have been originally from Holſtein, and the utmoſt attention was paid to warmth and cleanlineſs, ſo that even in ſummer the animals appeared in the meadows cloathed with ludicrous care.[2] It was probably known from experience that the climate was too moiſt for wheat, and too cold for rice; and paſturage being preferred to inferior crops, the ſmall portion of fertile land was divided into paſturage and gardens.

Rivers.

The chief rivers of the United Provinces are the Rhine, and the Meuſe; the latter here receiving at its eſtuary the Aa, joined with the Domel from the S.; and from the N. that great outlet of the Rhine called the Waal: and near 40 Britiſh miles further to the W. the ſecond grand outlet of the Rhine, called the Leck, joins the Meuſe, after which but a ſmall ſtream paſſes by Leyden to the German ocean. The principal river falling into the Zuyder Ze is the Iſſel, which riſes not far to the S. W. of Munſter, and after receiving the canal of Druſus near Duiſberg becomes a conſiderable ſtream. On the N. of this is the ſmall eſtuary of Wecht, which riſes to the N. of Munſter. The rivers of Friſland and Groningen are ſo diminutive that they are moſtly loſt in the numerous canals before they join the ſea.

Lakes.

The lakes are of ſmall extent, if we except what is called the ſea of Haarlem, on the N. of which is the Y, a broad piece of water paſſing by Amſterdam, rather wearing the ſemblance of a creek of the ſea, than of a river: and even the Meer of Haarlem can hardly be regarded as a lake of freſh water. There are other ſmall lakes in the N. of Holland, and in Friſland and Groningen; not to mention ſome amidſt the marſhes of Over Yſſel.

[1] Marſhall, i. 264. [2] Ibid. i. 37.

Of

Of mountains there is not the moſt diſtant ſemblance; and even the few hills towards the E. may more properly be denominated little elevated tracts of ſand. PROGRESSIVE GEOGRAPHY.

When it is conſidered that the Batavian territory is deſtitute of wood-lands, of mountains, and of limeſtone diſtricts, it will eaſily be perceived in what reſpects its flora is inferior to that of Britain: we ſhould ſearch in vain among the ſwamps, the level meadows, or the ſandy heaths of Holland for the numerous ſpecies of orchideæ, and of papilionaceous plants that inhabit the beech-woods of Suſſex, and Kent, or the open chalk downs of the ſouthern and midland counties, and though the bleak heaths of Gelder, and Overyſſel may furniſh a few of our mountainous plants, ſuch as the arbutus uva urſi, and vaccinium vitis idæa; yet thoſe that dwell by the ruſhing torrents of Wales and Scotland, that fix themſelves to the rocky bottom of our pellucid lakes, or flouriſh in the cloudy ſolitude of Snowden, of Skiddaw, or of Ben Nevis are wholly wanting in the liſt of indigenous Batavian vegetables. The only plants poſſeſſed by Holland which are not found in the Britiſh iſlands are Iſnardia paluſtris, trapa natans, calla paluſtris, valliſneria ſpiralis, all aquatic plants, and natives of the Rhine, and other waters in the province of Holland; and veronica peregrina, globularia vulgaris, campanula perſicifolia, ornithogalum minimum, and oenothera biennis, *evening primroſe*, growing on the frontiers of Brabant and Weſtphalia. Botany.

In the zoology of the United Provinces there is nothing peculiar, or worthy of remark; the horſes are chiefly from England and Flanders, the oxen from Holſtein. The ſtork is here frequent, though unknown in England. The ſhores abound with excellent fiſh, particularly turbot and ſoals; but the herrings, a favourite food, are derived from the northern ocean, and are chiefly brought to Flardingen, or Vlaerdingen, a port on the W. of Rotterdam, ſo noted in antient times that the earls of Holland are firſt mentioned by the ſtyle of earls of Flardingen. Zoology.

Minerals are unknown, if we except the ſlight inciſions for peat; and the land being moſtly alluvial, it is ſcarcely poſſible that any metals, or even coal, ſhould be found. In digging a well near Amſter- Mineralogy.

Mineralogy. dam ſea-ſand was diſcovered at the depth of more than 100 feet, a proof that in primitive ages the land had encroached upon the ſea, which afterwards reſumed a part of its rights. On the other hand in digging the marſhes trees have been found at a conſiderable depth, often with their heads towards the E. as if they had yielded to the fury of the weſtern winds. The umber or ligneous earth, ſometimes uſed by the Dutch to adulterate their ſnuff, is not a native product, but is brought from the vicinity of Cologne, where it occurs in vaſt beds, and is ſometimes even uſed for firing. The Dutch not only procure peat from the moraſſes, but alſo from the bottoms of the rivers by dragging up the mud, which is expoſed to dry on the ſhore, then cut into ſmall pieces, and again dried for uſe. No mineral waters are here known: and there are few uncommon appearances of nature, though the whole country may be deemed an artificial curioſity, from the number of canals, and from the vaſt dykes erected to exclude the ſea. Theſe are often protected by a covering of ruſhes, ſtrongly faſtened with wood; yet ſometimes dreadful inundations have taken place, an evil which long experience ſeems latterly to have taught them to prevent.

Natural Curioſities.

DENMARK.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

THE name of Denmark, implying the marches, boundaries, or territories, of the Danes, is derived from the inhabitants, who are ſaid to have been ſo denominated from one of their firſt leaders called Dan. Such etymologies are always uncertain; and even when clear the knowledge acquired is of no importance. The people are mentioned by the name of Danes in the ſixth century, when we firſt begin to acquire a faint idea of Scandinavia from the hiſtory of Jornandes. Norway, anciently Norrik, or the Northern kingdom, affords a palpable and preciſe derivation. Names.

Theſe kingdoms, which in former times have, by repeated emigrations, changed the deſtinies of a great part of Europe, and continue deeply to intereſt the ſtudent of hiſtory, conſtitute a ſingular expanſion of territory. For from the river Elbe, in the ſouth, to the northern extremity of Daniſh Lapland, and the wild environs of the river Tana, may be computed, after excluding the entrance of the Baltic, an extent of not leſs than 1400 Britiſh miles in length, by a medial Extent.

Extent. medial breadth of only 150. Of this great length Denmark occupies about 260 miles, while the remainder belongs to Norway. This extent of coaſt might be ſuppoſed to conſtitute a formidable naval power; but unfortunately the havens are neither numerous nor important, and are better adapted to the fleets of ſmall veſſels which formerly ſtruck Europe with diſmay, than to the pomp and magnitude of modern navigation. To the ſouth the Daniſh province of Holſtein borders on the wide territories of Germany; on the eaſt, weſt, and north, Denmark is ſurrounded by the ſea. The eaſtern limits of Norway are chiefly indicated by a long chain of mountains, paſſing between that country and Sweden.

Boundaries.

Original Population. The original population of Denmark appears to have conſiſted of Cimbri, or Northern Celts, the anceſtors of our Welch; and who in particular held the Cimbric Cherſoneſe, or modern Jutland and Sleſwick. On the progreſs of the Goths from the N. and E. the Cimbri were expelled; and being joined by part of the Teutones, or more ſouthern Germans, they were in queſt of other poſſeſſions, when they were defeated by Marius. Yet the Cherſoneſe continued to retain their name; and Tacitus mentions that in his time there exiſted a ſmall ſtate of the Cimbri, probably near the mouth of the Elbe, while the remainder of the Cherſoneſe was poſſeſſed by ſeven Gothic tribes among which he names the Angli, who afterwards gave appellation to England, and who appear to have reſided in the eaſtern part of Sleſwick, where there is ſtill the province of Anglen. The original poſſeſſors of Norway, which, with Sweden, conſtitutes the ancient Scandinavia, appear to have been the Fins and the Laps, who were driven to the northern extremities by the Gothic invaſion, allegorically ſaid to have been conducted by Odin the God of War. The population has ſince continued pure and unmixed by foreign conqueſts; and the Norwegians ſtill retain the muſcular frame, blooming countenance, and yellow hair of the Normans, ſo well known in France, Italy, and England.

Progreſſive Geography. The progreſſive geography of Denmark may be traced with ſome preciſion from the firſt mention of the Cimbric Cherſoneſe by aſtoniſhed Rome. Pliny ſupplies ſome omiſſions in the deſcription of Tacitus, by

Progressive Geography.

by mentioning the Sinus Codanus, or Baltic, and ſome bays and iſlands in this vicinity. Tacitus deſcribes the *Suiones*, anceſtors of the Danes, not of the Swedes, as imagined by careleſs geographers, as conſiſting of ſtates ſituated in the ſea, that is in the iſlands of Zeeland, and others which ſtill form the ſeat of Daniſh power.[1] He adds that they had fleets, their ſhips being of a ſingular form, capable of preſenting either end as a prow; that they had acquired wealth, and were ruled by a monarch. The whole circumſtances, as well as the courſe of the narration, might eaſily be ſhown to apply to the Danes, and not to the Swedes who are the *Sitones* of that great writer. The progreſſive geography of Denmark may afterwards be illuſtrated from various paſſages, eſpecially from Jornandes, and the Francic hiſtorians, till Adam of Bremen, in the eleventh century, gave a minute deſcription of the country, and their own hiſtorian Saxo Grammaticus compoſed his claſſical work about the year 1180.

The geography of Norway, as may be expected, is more obſcure; nor is there reaſon to believe that any part, except its moſt ſouthern extremity, had been ſeen by the Roman mariners. It ſeems therefore a vain conception, merely ariſing from ſimilarity of names, to ſuppoſe that the Nerigon of Pliny is Norway; and to add to the abſurdity that the city of Bergen, which was only built about the year 1070, is the Bergos of that author! The paſſage belongs to his deſcription of Britain;* and it would be more rational to enquire for theſe iſles, (for he eſpecially mentions Bergos as a ſeparate iſle,) among the Orkneys; or perhaps off the coaſt of Jutland, where it is well-known that iſles have been leſſened and devoured by the fury of the weſtern waves. In his atttempt to illuſtrate this ſubject, D'Anville has ſunk into the groſſeſt abſurdities; and his arguments are not only puerile, but he even corrupts the text of Pliny. Suffice it to obſerve that he extends beyond all rational bounds the ancient knowledge of Northern Europe; and ſuppoſes that the promontory of Rubeas is the furtheſt extremity of Daniſh Lapland, inſtead of a cape in the N. of Germany ſtretching into the Baltic! It is painful to obſerve ſo able a

[1] Germ. c. 44.

* Lib. iv. c. 16. *Britannia et Hybernia.* "Sunt qui et alias prodant, Scandiam, Dumnam, Bergos: maximamque omnium Nerigon, ex qua in Thulen navigetur."

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geographer following in this inſtance the dreams of Cluverius and Cellarius, while he juſtly reſtricts the ancient knowledge of Aſia and Africa. Few materials afterwards ariſe for the progreſſive geography of Norway, till the time of Jornandes; whoſe account is ſucceeded by the navigation of Ohter reported to the great Alfred, and the deſcription by Adam of Bremen.

The chief hiſtorical epochs of theſe conjunct kingdoms muſt be ſeparately conſidered, till their union in the fourteenth century.

Hiſtorical Epochs.

1. The moſt ancient population of the continental part of Denmark by the Cimbri, who probably poſſeſſed the adjacent large iſles, the ancient and choſen ſeat of the Daniſh monarchy; but of this laſt poſition there is no evidence.

2. The conqueſt by the Goths, who appear to have proceeded from Scandinavia into the iſles, and Jutland, as the dialect differs greatly from the German Gothic, while it is a ſiſter of the Swediſh and Norwegian.

3. The Roman and Francic accounts of Denmark, from the time of Pliny and Tacitus to that of Charlemagne.

4. The fabulous and traditional hiſtory of Denmark, which extends from about the year of Chriſt 500 to the reign of Heriold, mentioned by the Francic hiſtorians in the time of Charlemagne.

5. The conqueſt of Denmark by Olaf II king of Sweden, about the year 900. The Swedes appear to have been expelled by the Norwegians, for we afterwards find Hardegon of Norway king of Denmark. The Daniſh antiquaries have not ſhown much judgment in extricating the ancient hiſtory of their country, in which they ſhould have preferred the Francic hiſtorians to the Icelandic Sagas. Some difficulties indeed ariſe becauſe Jutland and the iſles were occaſionally divided into two monarchies; but if the Daniſh writers ſhowed as much acuteneſs as induſtry the embaraſſments might diſappear.

6. The more certain hiſtory commences with Gurm, or Gormo, A. D. 920, but there ſeems no evidence whether he ſprung from a native race, or from the Swediſh, or Norwegian. Gormo is ſucceeded by his ſon Harald Bleatand 945, who is followed by his ſon Swein 985, well known by his invaſion of England, where he in ſome meaſure uſurped the ſovereignty, and died A. D. 1014.

7. The

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7. The reign of Canute the great, king of Denmark, England, and Norway. The converſion of Denmark to Chriſtianity had commenced in the beginning of the ninth century, when St. Amſgar began to diffuſe the light of religion in Jutland; and towards the middle of that century there were churches at Sleſwick, and even at Arhus: but Chriſtianity was far from being univerſal in Denmark till the reign of Canute the great, when it was followed by its univerſal conſequences, the ceſſation of piracy and rapine, and the diffuſion of induſtry and civilization. In the year 1086 Denmark diſplayed to Chriſtendom a regal ſaint, and martyr, in Canute IV.

8. The wars of Denmark with the Wends, or Slavonic inhabitants of the ſouthern ſhores of the Baltic, who by the ignorant hiſtorians of the middle ages are ſtyled Vandals, as the Gutæ of Ptolemy are by them ſtyled Goths, whence the Swediſh Gothland inſtead of Guthland.

9. The reign of Waldemar, ſurnamed the great, A. D. 1157, who defeats the Wends in many battles, and ſubdues the iſle of Rugen. Hence followed ſlowly the converſion of Pomerania, and of the countries on the eaſt. Waldemar is regarded as the parent of the Daniſh laws. In 1223 the ſecond Waldemar, with a fleet of 1000 ſhips, ſubdued a part of Livonia and Eſtonia; on which occaſion is ſaid to have been firſt diſplayed the noted banner of Dannebrog, being red with a white croſs.

10. The marriage of Hakon VI, king of Norway, with Margaret daughter of Waldemar III king of Denmark, A. D. 1363, produced the memorable union of the three crowns of the north. On the death of her young ſon, Margaret aſcended the throne of Denmark and Norway in 1387, and that of Sweden in 1389. She died in 1412; and Sweden ſoon after prepared to throw off the yoke. Her huſband, Eric of Pomerania, reigned about 26 years after her death; and was followed by Chriſtopher of Bavaria, who removed the royal reſidence from Roſkild to Copenhagen, the ſource of the elevation of the latter city.

11. The acceſſion of the houſe of Oldenburg, in the perſon of Chriſtiern I, A. D. 1448. The repeated revolts of Sweden were ſup-

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preſſed by his ſucceſſor John, who was crowned at Stockholm in 1497, and the next year concluded an alliance with Louis XII of France, and James IV of Scotland. John had repeated wars with the Hanſeatic league, which ſupported the Swedes againſt his authority.

12. The tyrannical and unhappy reign of Chriſtiern II, when Sweden was emancipated by the efforts of Guſtaf Waſe.

13. The abolition of the Roman Catholic religion by Chriſtiern III, 1537; but the Lutheran had been already introduced in 1526.

14. The reign of Chriſtiern IV, who carries on unſucceſsful wars againſt Auſtria, and Sweden; the latter being continued by his ſucceſſor Frederic III, who was conſtrained to ſign a treaty in March 1660,* by which he abandoned to Sweden the valuable province of Scone, and other parts in the ſouth of Scandinavia, which had long remained in the poſſeſſion of the Danes, together with the fertile iſland of Rugen.

15. The memorable revolution of the 23d October 1660, by which the crown was declared abſolute and hereditary. The ſubſequent events have been little memorable.

Of the Norwegian hiſtory the chief epochs may be conſidered in the following order:

1. The original population by the Fins and Laplanders.

2. The conqueſt by the Goths.

3. Norway was divided into twenty, or more, petty monarchies, till the ninth century, being as may be conceived in a more ſavage ſtate than Denmark, and Sweden. From that ſingular and intereſting work, the hiſtory by Snorro, which is chiefly that of Norway, it would appear that the Norwegian monarchs ſprung from the ancient royal family of Sweden. The ſovereignty originally founded in the S. E.

* Jemptland and Herndal, regarded as Norwegian diſtricts, had been yielded to Sweden in 1645. Pontoppidan, and what is ſtill ſtranger Mr. Coxe, have in their maps extended Herndal or Haridal (Eaſching i. 607.) acroſs to the ſea, while it is a ſmall province to the S. of Jemptland, on the E. of the Scandinavian Alps. Of this ſtrange miſtake it appears that Homann's map is the ſole ſource; and his maps are indeed notorious for groſs inaccuracy: nor was it in 1660, as the map aſſerts, that Herdal was yielded to Sweden. Conſult the impartial teſtimony of the general map of Sweden by Hermelin, or in his Atlas the particular map of the province of Herjeadalen. The detection of this great error was neceſſary, as Mr. Coxe's Travels are deſervedly in many hands.

part

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part of Norway, around the modern city of Chriſtiana, was extended by degrees, and Harald Harfagre about A. D. 910 became maſter of all Norway. During the conteſt many diſcontented princes and nobles left the kingdom; and among other Ganga Hroſ, or Rollo the walker, ſo called becauſe no horſe could ſupport his weight, proceeded to France; where, in the year 912, the province afterwards ſtyled Normandy was ſurrendered to him and his warlike followers. The romantic ſucceſſes of the Normans in England, Italy, and Greece, are delineated by the maſterly hand of Gibbon.

4. The reign of Olaf I, when Norway and Iceland were converted to Chriſtianity. Greenland had been diſcovered A. D. 982, by Eric the red, and his attendants, from Iceland; which iſland was itſelf peopled from Norway 874—880. In this reign of Olaf I, Vinland, or Wineland, a more ſouthern part of N. America, was diſcovered by Biarn, and by Leif, ſon of Eric the red, A. D. 1003. The little colony, ſettled in Vinland about 1006, periſhed from inteſtine diviſions. The country was ſo called from ſome wild grapes or berries; and is ſuppoſed to have been on the coaſt of Labrador, or more probably the iſland of Newfoundland. Currants, or ſmall grapes, are indeed found as far north as the Engliſh ſettlements on Hudſon's bay; and the diſtance from the Norwegian ſettlement in Greenland to Newfoundland, might eaſily have been traced by a veſſel running before the wind, as was the caſe. Yet Greenland alone would aſſign to the Norwegians the firſt diſcovery of America.*

5. The remarkable reign of Olaf II, the ſaint, 1014—1030. His ſecond ſon, Harald III, aſpired to the throne of England, and was ſlain in a battle againſt Harold king of England, on the 25th of September, 1066. This memorable conflict, which, by weakening the Engliſh force, led to the Norman conqueſt, has been haſtily deſcribed by our hiſtorians, who have confounded this king, ſurnamed *Hardrad*, with Harald *Harfagre* who reigned a century and a half before.

* It is ſingular enough that while the Welch antiquaries deafen us with the imaginary diſcovery of America by Madoc, A. D. 1170, the Norwegians have been contented with a ſimple unpretending narration of the facts. Mr. Pennant has ironically obſerved that his countrymen ſuppoſe that *penguin* derived its name from the Welch ſettlers, while that bird has a *black* head.

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The ſon and ſucceſſor of this king founded Biorgen, or Bergen, in 1069.

6. Magnus II, in the year 1098, ſubdued the Orkneys and Hebudes, which had been ſubject to the Normans from about 850; but the earls had refuſed homage to the Norwegian kings.

7. The Hebudes, or weſtern iſlands, was ſurrendered to Scotland, A. D. 1266, by Magnus V: but the Orkneys continued to be regarded as ſubject to Norway till the year 1468. Iceland, which had exiſted as an independent republic, about this time became ſubject to Norway.[2] Magnus V firſt inſtituted hereditary dignities; and imprudently excluded the deputies of the people from the national aſſembly.

8. The final union of Norway with Denmark A. D. 1387; ſince which period the events muſt be ſought in the hiſtory of the latter kingdom.

Antiquities.

The ancient monuments of Denmark and Norway are chiefly what are called Runic, though it be not clear at what period the uſe of the Runic characters extended ſo far to the north. Circles of upright ſtones are common in all the Daniſh dominions, in Holſtein, Sleſwic, Jutland, the iſles, Norway, and Iceland; in which latter country their origin is perfectly aſcertained, as ſome were erected even in recent times of the Icelandic republic, being called Domhring, or Circles of Judgement. Some alſo appear to have been cemeteries of ſuperior families. Monuments alſo occur of two upright ſtones, with one acroſs; and of the other forms imagined by our antiquaries to be Druidic. Since the converſion of theſe countries to Chriſtianity, in the eleventh century, many churches were erected; among which are thoſe of Bergen and of Drontheim, both built of ſtone in that century. The reſidences of the chiefs appear to have been generally conſtructed of wood; for there are few ancient caſtles to be found in Denmark or Norway. In Iceland there ſtill exiſts a bath, built by Snorro, the famous hiſtorian, in the thirteenth century; but the edifices were there alſo of timber, ſo that no remains can exiſt.

[2] Torf. Hiſt. Nor. iv. 334.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenue.—Political Importance and Relations.

Religion. THE religion of Denmark and Norway is the Lutheran. There is no archbiſhop; but the biſhopricks are twelve, ſix in Denmark, four in Norway, and two in Iceland. The chief ſee is that of Zeeland, which yields about 1000l. a year. The others are from 400l. to 600l.: the biſhopricks of Skalholt and Holun in Iceland are only valued each at 150l., but living is far cheaper in that iſland. The other clerical orders are provoſts, or archdeacons, pariſh prieſts, and chaplains. The parochial clergy are maintained by their glebes, tythes, and ſurplice fees; but in Jutland ſome of the livings do not exceed 20l. a year.*

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Government. Since the revolution of 1660, the Daniſh government has been an abſolute monarchy. That revolution was produced by the obſtinacy of the nobility, and conſequent enmity of the clergy and burgeſſes, who perceived no other means of humbling their adverſaries. As the northern nations are ſeldom deficient in good ſenſe, we may conceive that theoretic reaſonings on the ſubject are idle; and that as the nobility would make no conceſſion whatever, there remained only the alternative of an abſolute monarchy, or a civil war. At the ſame time, as the intentions of the clergy and burgeſſes were perfectly underſtood, and their original aim was to acquire a parity of power, it may well be regarded as extremely ungenerous in the monarchs,

* Rieſbeck, iii. 101, gives a ſingular picture of the Daniſh parochial clergy, who are as much venerated by the people as they were in Scotland a century ago; but are orators of deſpotiſm, being held in ſtrict bonds by the court.

that

Govern-ment. that they did not reſtore the national council, ſo conſtituted and balanced. It is indeed not a little remarkable that, ſince that period, the genius of Denmark has ever yielded to that of Sweden, a proof that an abſolute ſovereign in fact weakens his own power; for liberty is the parent of induſtry and exertion, and a free people can ſupply ſtrength and reſources to the throne, infinitely ſurpaſſing thoſe of deſpotiſm.

Laws. The Daniſh government has however been generally conducted with mildneſs and moderation; and their regal acts paſs through many councils, who carefully obſerve the legal forms. The laws are chiefly comprized in the code of Chriſtiern V, who reigned in the end of the ſeventeenth century. This code conſiſts of ſix books: 1. on judgement and judges: 2. religion and religious orders: 3. civil and economical affairs: 4. navigation and maritime laws: 5. property: 6. crimes: forming only a ſmall volume like the laws of Sweden, Ruſſia, and Pruſſia; while in the ſouth of Europe a life might be conſumed in peruſing the laws of ſome of the ſtates.

Population. The population of the Daniſh dominions is computed at two millions and a half; though there ſeem little room to infer that it yields to that of Sweden. If we ſuppoſe the ſquare contents to be about 180,000 miles, there will only be 12 inhabitants to the ſquare mile. Norway is not ſuppoſed to contain more than 700,000 ſouls, nor Iceland above 50,000, the former only yielding ſix, the latter one, to the ſquare mile.

Colonies. Denmark poſſeſſes ſome ſmall colonies, as Tranquebar on the coaſt of Coromandel, Chriſtianſburg on the coaſt of Guinea, a ſmall part of Greenland in America; with three iſlands in the Weſt Indies, St. Jan, St. Thomas, and St. Croix, of which the latter was purchaſed from France in 1733.

Army. The army of this kingdom is computed at 70,000 men, of which Denmark ſupplies about 40,000, and Norway the remainder. The

Navy. navy conſiſts of 33 ſhips of the line, manned by about 11,000 ſeamen, and 5000 marines.

Revenue. The annual revenue is computed at about one million and a half ſterling, being ſuperior to that of Sweden. Denmark contributes

543,554l.;

543,554l.: Norway 290,000l.: Slefwic and Holftein 300,000l.: the West Indian iflands 262,000l.: the toll levied upon fhips paffing the Sound 122,554l.: Altona, 3,150l. The expences of the ftate amount annually to about 1,050,000l.; and it is burthened with a debt of 2,600,000l.[1] Revenues.

Political Importance and Relations.

Denmark and Norway have long ceafed to be objects of terror to the fouthern powers, and centuries have elapfed fince any of the monarchs has been diftinguifhed in war, while the Swedes on the contrary have maintained their martial fpirit. Chriftiern IV, whofe long reign extended from 1588 to 1648, was the laft of the warlike monarchs; and fince that period the Danes have been vanquifhed in every conteft, either in Sweden or Germany. The refources of the monarchy have alfo been weakened by its defpotifm; and Denmark is little regarded among the European powers. A timid policy has long united her in alliance with Ruffia, as a mean of fecurity againft Sweden; but more wifdom would appear in a firm alliance with Sweden* and Pruffia againft the exorbitant power of the Ruffian empire. To a nation at war with Pruffia, Denmark may conftitute a valuable ally; but difference in religion, and other caufes, have fecured this ftate from the influence of Auftrian policy. To France it may be conceived that Denmark would now prove a more ufeful and near ally than Sweden, the connexion with which kingdom was grounded on peculiar circumftances in the feventeenth century, before the dawn of Pruffian greatnefs; and at prefent hardly a cafe could be imagined in which Sweden could yield the fmalleft affiftance to France. The natural and deep connexions between England and Ruffia would, on the fuppofition of a firm alliance againft the latter power, of courfe eftrange the former from Denmark.

[1] Boettieher's Tables.

* It would be wife in both the Scandinavian fovereigns to abandon fabulous and interfering titles; and to content themfelves with the general ftyle of Sweden and Denmark.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.— Language.— Literature.— Education.— Univerſities.— Cities and Towns.— Edifices.— Roads.— Inland Navigation.— Manufactures and Commerce.

Manners and Customs.

THE manners and cuſtoms of the ſuperior Danes differ little from thoſe of the ſame claſſes in other parts of Europe. To the diſgrace of the government the peaſantry continue in a ſtate of vaſſalage; except thoſe of the crown, who have been recently delivered by the patriotiſm of the heir apparent, and a few other inſtances. They are of courſe idle, dirty, and diſpirited; while thoſe of Sweden appear to have been always free; nor would it be eaſy to fix the period when vaſſalage, ſo foreign to the nature of the northern governments, firſt began in Denmark. In addition to this radical cauſe of the want of national energy, property is ill divided; and the middle claſſes, eſpecially that of yeomanry, the glory of England, are almoſt unknown. In Norway, on the contrary, every peaſant breathes the air of freedom, except thoſe of a few noble eſtates near Frederickſtadt. "The benefits of the Norway code are ſo viſible in its general effects on the happineſs and in the appearance of the peaſants, that a traveller muſt be blind who does not inſtantly perceive the difference between the free peaſants of Norway, and the enſlaved vaſſals of Denmark, though both living under the ſame government."[1] Among the numerous inconſiſtencies of human nature it is indeed one of the moſt ſingular, that abſolute monarchs ſhould be anxious to improve the breed of their horſes, and to debaſe that of their ſubjects. The able writer laſt quoted proceeds to obſerve that the Norwegian peaſants are ſpirited, frank,

[1] Coxe, v. 9.

open,

Manners and Customs.

open, and undaunted, yet not inſolent; and, inſtead of the ſervile bow, they ſhake the hand of their ſuperior or benefactor: in the comforts of life they ſeem to yield to none, except ſome of the Swiſs: their uſual dreſs is of a ſtone colour, with red buttonholes, and white metal buttons; and the women often appear only dreſſed in a petticoat and ſhift, with a cloſe collar round their throat, and a black ſaſh. Their uſual bread, like that of the Scotiſh peaſantry, conſiſts of flat cakes of oatmeal; and in times of great ſcarcity is mingled with the white inner rind of trees.

Laplanders.

At the furtheſt northern extremity of Norway is the region of Finmark, or more properly Lapmark, being a large province poſſeſſed by the Daniſh Laplanders, and extending even to the eaſt of Cape Nord towards Ruſſian Lapland. The inhabitants of this wild and remote province have been deſcribed at conſiderable length by Leems, who has preſented a complete and faithful picture of Laplandic manners.[2] This ſingular race of men is of a ſmall ſize, generally about four feet, with ſhort black hair, narrow dark eyes, large heads, and high cheek-bones, a wide mouth, and thick lips, and of a ſwarthy complexion. In the ſouthern part of Finmark they are mingled with Norwegians; but the northern wilderneſs is wholly their own. They call themſelves *Same*, their ſpeech *Same-giel*, and their country *Same-Edna*, being probably of the ſame race as the Samoieds. The language has only an affinity with the Finniſh, but not nearly ſo much as the Daniſh has with the German;[3] and it would ſeem that they had anciently a different ſpeech, which they enriched with large additions from that of their more poliſhed neighbours the Fins. Towards the ſhore they build huts; and on the mountains uſe tents of a ſingular form, being flatly conic, and divided into two parts by a kind of paſſage, each part having three rude ſubdiviſions, only marked on the floor; the two furtheſt for the maſter, miſtreſs, and gueſts; the middle on each ſide of the fire for the children: while thoſe neareſt the door are aſſigned to the ſervants; behind whom the cattle alſo find refuge, theſe

[2] Leemius de Laponibus Finmarchiæ. Copenhagen 1767, 4to. Scheffer treats of the Swediſh Laplanders: of the Ruſſian there ſeems no ample account.

[3] Leems, p. 11.

MANNERS AND CUSTOMS.

being indeed few, while the rein deer form their chief wealth. The ſun is here abſent for ſeven weeks; yet from ten in the forenoon to one in the afternoon there is a kind of twilight even in the ſhorteſt days, ſo that one may read without a candle; but the ſtars are very viſible, and the moon, when apparent, ſhines all the day. In return the ſun never ſets for ſeven weeks of ſummer; but his beams are dull and remiſs in the night, when he aſſumes a ruddy hue. Several rivers, particularly the Tana in eaſtern Finmark, which ſometimes ſwells to a great height with the melted ſnows, ſupply ſalmon, and other fiſh, a conſiderable part of the Laplandic food; but at a feſtival are ſeen mutton, or rein-deer, and mead. The men wear conic red caps, lined with fur, and a kind of robe of cloth or ſkin; the poor ſometimes uſing that of ſalmon, which appears like a white ſhagreen: the head and neck are protected with a ſort of cowl, and the veſt is of undreſt ſheepſkin, the wool inwards. The head-dreſs of the women is narrowed in the middle, whence it widens like a baſon at the top; and the veſt and robe reſemble thoſe of the men. Their amuſements are ſhooting with the bow at a mark, a kind of tennis, and a game reſembling draughts. They are alſo fond of wreſtling, and other exerciſes.[4] They were formerly addicted to magic, and were fabled by incantations to invoke a demon in the ſhape of a fly, which was called the *gan-fly*, and commiſſioned to ſting their enemies. Till recent times they were immerſed in paganiſm, regarding particular mountains and rocks as holy: their chief god was Radien, who dwelled in the ſtarry heaven; in the lower aerial regions were Beivi or the ſun, a god, as Grotius has obſerved, very unjuſt to them; with Horangalis or the thunderer, and other divinities. On earth were the gods of hunting and fiſhing; and the goddeſs Maderakko, with her daughter Sarakka, a kind of Venus, who prepared the body after Radien had ſent the ſoul. The Saivo Olmak, or gods of the mountains, were ſuppoſed to be oracular. For a more full account of this mythology the reader is referred to Leems. The places of ſacrifice were chiefly holy mountains near the firth of Waranger, and along the Tana, and ſome on the bay of Porſanger. Their magical drums and ſongs are already trivial.

[4] Leems, 388.

Amidſt

Amidſt the converſion of the northern nations to Chriſtianity, the Laplanders had been unaccountably neglected. Eric Bredal, biſhop of Drontheim, made ſome vain attempts about the year 1660; but the royal miſſion was not founded till 1714; and extended to the Laplanders of Finmark, with thoſe of Norland to the ſouth, being a conſiderable portion of the dioceſe of Drontheim. Since that period the miſſionaries have exerted themſelves with great ſucceſs; there being commonly two for Finmark, one for the eaſt who preſides over Waranger, Tana, and Laxefiord; the other for the weſt, over Porſanger, Hvalſund, and Alten.[5] Leems well delineates the hardſhips ſuffered by theſe miſſionaries; among which, the cold is ſo exceſſive that, when he was ſitting near a ſtrong fire, the wall behind would preſent his ſhade in thick hoar froſt. MANNERS AND CUSTOMS.

The manners and cuſtoms of the Greenlanders ſhall be conſidered in treating of N. America. Suffice it in the mean time to mention that the curious canoes, only capable of containing a ſingle perſon, and which are ſometimes driven as far as the northern iſles of Scotland, where they are ſaid to belong to Finlanders, are in truth only known in Greenland; whence they are driven by the violence of the weſtern wind: nor is the diſtance greater from the ſouth of Greenland, than from the north of Finmark; where, as appears from Leems, the canoes are of a very different conſtruction.

The people of Iceland being of Norwegian extract, have few peculiar manners, but retain more of the ancient dreſs and cuſtoms of their anceſtors. They are conſtrained to prepare flour from various plants deſcribed by Von Troil; and their chief animal nutriment is dried fiſh; the common beverage is ſyra, or ſour whey kept in caſks and left to ferment, beer being ſcarce.

If we except the Laponic, the languages ſpoken in the Daniſh dominions are all iſter dialects of the Gothic. The Icelandic is the moſt ancient and venerable; and being eſteemed the moſt pure dialect of the Gothic, has engaged the attention of many profound ſcholars, who have conſidered it as the parent of the Norwegian, Danith, and Swediſh, and in a great degree of the Engliſh, though it would ſeem that this Language.

[5] Leems, 570, &c.

laſt

Language. laſt is more connected with the Friſic, and other dialects of the north of Germany. In the ancient Icelandic the Lord's prayer is as follows:

Fader uor ſom eſt i Himlum. Halgad warde thitt nama. Tilkomme thitt Rikie. Skie thin Vilie ſo ſom i Himmalam ſo och po Iordannè. Wort dachlicha Brodh gif os i dagh. Ogh forlat os uora Skuldar ſo ſom ogh vi forlate them os Skildighe are. Ogh inled os ikkie i Freſtelſan. Utan frels os ifra Ondo. Amen.

In the Finniſh it is as follows:

Iſa meidan joca olet taiwaſſa. Pyhitetty olcon ſinum Nimes. Lahes tulcon ſinum Waldacundas. Olcon ſinum tahtos niin maaſca cuin taiwaſo. Anna meile tanapaiwana meidan joca paiwainen leipam. Sa anna meille meidan ſyndim andexi nuncuin mekin andex annam meidan welwottiſſem. Ja ala jahdata meita kiuſauxen. Mutta paaſta meita pahaſta. Amen.

And thus in the Laplandic:

Atki mijam juco lee almenſisne. Aitis ziaddai tu Nam. Zweigubatta tu Ryki. Ziaddus tu Willio naukuchte alm-ſne nau ei edna mannal. Wadde mijai udni mijan fært pæſwen laikelen. Jah andagaſloite mi jemijan ſuddoid naukuchte mije andegaſloitebt kudi mije welgogas lien. Jah ſiſſadaidi mijabni. Æle tocko kæckzællebma pahaſt. Amen.

It will hence appear that the Laplanders have borrowed ſome terms from the Gothic, as well as from the Finniſh.

Literature. The literature of Denmark cannot aſpire of much antiquity, having followed, as uſual, the introduction of Chriſtianity, which was not eſtabliſhed till the eleventh century. In the next century lived Saxo Grammaticus, whoſe hiſtory of Denmark abounds with fable, but whoſe ſtyle and manner are ſurpriſingly claſſical for that age. His contemporary or predeceſſor, Sveno, is more veracious and conciſe, and is eſteemed the father of Daniſh hiſtory. In general the ancient literature of Denmark is much more opulent than that of Sweden, as the collection of Daniſh hiſtorians may evince. Norway cannot boaſt of a native writer till a recent period; Theodoric the monk of Drontheim, who wrote a ſhort hiſtory of the ancient kings, being ſuppoſed to have been a German. But it is a truly ſingular circumſtance in the hiſtory of European literature, that letters highly flouriſhed in the remote republic of

of Iceland, from the eleventh to the fourteenth century; and independent of the fabulous Sagas, which might be counted by hundreds, the ſolid and valuable works then produced in that iſland might fill a conſiderable catalogue. From Iceland we derived the Edda, and our knowledge of the ancient Gothic mythology. From Iceland the Swedes, Norwegians, Danes, and Orcadians draw their chief intelligence concerning their ancient hiſtory, Snorro in particular being ſtyled the Herodotus of the north: and the Landnama, or book of the origins of Iceland, is a unique work, diſplaying the names and property of all the original ſettlers, and the circumſtances attending the diſtribution of a barbaric colony. LITERATURE.

After the reſtoration of letters Denmark continued to maintain her wonted aſcendancy over Sweden; and the name or Tycho Brahe is yet celebrated, but his little iſle of Hwen, noted for his aſtronomical obſervations, now belongs to Sweden. This laſt kingdom has for a century been more diſtinguiſhed in literature than Denmark, which has been chiefly occupied in hiſtory and antiquities, while Sweden, without neglecting theſe provinces, has alſo cultivated with great ſucceſs the moſt intereſting branches of natural hiſtory. The names of Arnas Magnæus, Langebek, Schoening, and Suhm, are eminent among the cultivators of national hiſtory; and Holberg was a writer of wit as well as of erudition. The botany of Denmark has been illuſtrated by Œder; and Niebuhr is diſtinguiſhed as an intelligent traveller: but in the other paths of ſcience and literature there ſeems to be a deplorable deficiency; nor would it be eaſy to ſpecify a Daniſh poet, philoſopher, phyſician, or able and critical hiſtorian.

The ſilence of travellers and geographers concerning the modes of education purſued in different countries has been more than once regretted in this work; but the materials are not equally deficient concerning Denmark. While in Sweden there is only a ſchool in each of the large towns, maintained at the expence of the crown; in Denmark each pariſh is provided with two or three ſchools, where children are taught to read and write their native tongue, and the principles of arithmetic: the ſchoolmaſters are allowed about 12l. a year, with a houſe, Education.

Education. houſe, and ſome other advantages.[6] There are beſides many Latin ſchools, maintained at the royal expence; 16 in Holſtein; 11 in Sleſwic; 19 in Denmark proper or Jutland and the iſles: but only 4 in the wide extent of Norway; and 2 in Iceland. Theſe have a rector or chief maſter, a conrector, and two or three aſſiſtants; but the ſmalleſt have only one maſter, the ſalaries being from 60l. to 200l. a year. There is alſo a ſpecial ſeminary for the Laplanders at Bergen: and at Soroe, Odenſee, and Altona, there are ſuperior academies of education.

Univerſities. The univerſities are at Copenhagen, and Kiel. There ought to be another at Bergen. The royal academy of ſciences was founded in 1742, but has been more diſtinguiſhed in national antiquities, than natural hiſtory. In 1746 was founded the ſociety for the improvement of northern hiſtory, alſo ſtyled the royal ſociety of Icelandic literature. There is another reſpectable inſtitution at Drontheim, ſtyled the royal ſociety of ſciences. Theſe foundations confer honour on the Daniſh government; and will doubtleſs contribute to diffuſe ſcience, and inſpire emulation.

Cities and Towns. Copenhagen. Copenhagen, the chief city of Denmark, ſtands in a delightful ſituation, on the eaſtern ſhore of the large and fertile iſland of Zeeland, about 25 Britiſh miles to the ſouth of the noted ſound, where the veſſels that viſit the Baltic pay a ſmall tribute to Denmark. It is the beſt built city in the north, for though Peterſburg preſent more ſuperb edifices, yet Copenhagen is more uniform; the houſes being moſtly of brick, but a few of freeſtone from Germany.[7] The ſtreets are rather narrow, but well paved. This city only became the metropolis in 1443, being formerly an obſcure port, whence it retains the name of Kiobenhaven, or the harbour of the merchants, and it has little claim to antiquity.* The royal palace, which was a magnificent pile, was conſumed by fire a few years ago: and the city ſuffered dreadfully from the ſame cauſe in 1728. It is regularly fortified, the circumference being between four and five miles, and the inhabitants about

[6] Coxe, iv. 57. v. 187. [7] Ib v. 126

* The moſt ancient capital was Leyre, or Lethra, near Roſkild, which laſt became the metropolis about A. D. 950. Mallet Abr. p. 13. For Roſkild ſee Buſching, i. 182. Coxe, v. 262.

90,000. The harbour is ſpacious and convenient, having on the ſouth the iſle of Amak, peopled by the deſcendants of a colony from Eaſt Friſland, to whom the iſland was granted by Chriſtiern II, to ſupply his queen with vegetables, cheeſe, and butter, a deſtination ſtill retained. The magiſtrates are appointed by the king; but the burgeſſes have deputies to protect their rights. Cities and Towns.

Next in dignity, though not in population, is Bergen the capital of Norway, founded in the year 1070, though ſome aſcribe the foundation to the preceding year. It is ſeated in the centre of a valley, forming a ſemicircle round a ſmall gulph of the ſea. On the land ſide it is defended by mountains; and on the other by ſeveral fortifications. All the churches and many of the houſes are of ſtone. The caſtle and cathedral are remarkable edifices. The chief trade is in fiſh, hides, timber, &c. and Bergen was formerly connected with the Hanſeatic towns. It retained the right of ſtriking money till 1575. This city, being chiefly conſtructed of wood, has been expoſed to repeated conflagrations, among which the moſt dreadful were thoſe of 1248, 1472, 1640, 1702, 1756, and 1771; during which laſt it is ſaid that the flames were viſible in the iſles of Shetland, or at leaſt the red reflexion in the ſky. The population is computed at 19,000.[8] Bergen.

The third city of Denmark, and indeed the ſecond in population, is Altona on the Elbe, within a gun-ſhot of Hamburgh, originally a village of the pariſh of Ottenſen; but in 1640 it became ſubject to Denmark, and was conſtituted a city in 1664. In 1713 it was almoſt entirely reduced to aſhes by the Swedes; but its commerce was afterwards ſo much foſtered by the Daniſh ſovereigns, as a diminutive rival of Hamburgh, that it is computed to contain 25,000 inhabitants.[9] Altona.

Chriſtiana, in the ſouth of Norway, muſt alſo be named among the chief towns, though it only contain 10,000 ſouls. It ſtands in the midſt of a fertile country; and is by ſome eſteemed the capital of Norway, becauſe it contains the chief court of juſtice, and is unqueſtionably the moſt beautiful town in that kingdom. It was founded by Chriſtiern IV, in 1624, after Opſlo was conſumed by accidental fire. Chriſtiana being ſituated in the midſt of iron and copper mines, and Chriſtiana.

[8] Buſching, i. 369. [9] Ib. ii. 68.

Cities and Towns.

not far from the celebrated ſilver mines of Kongſberg, the export of metals is conſiderable; but tar and deals form the chief articles. The deals are moſtly ſent to England; the red wood being produced from what is called the Scotch fir, and the white from the ſpruce fir.[10]

Drontheim.

Drontheim, about 270 Britiſh miles to the N. of Bergen, was anciently called Nidaros. The inhabitants are only computed at 8000; but as this is the moſt northern city in Europe except Tornea, the population cannot of courſe be great. Drontheim is ſituated on the river Nid, whence it derived its name, and was founded in the year 997, being the reſidence of the ancient kings of Norway, and afterwards an archbiſhoprick, ſuppreſſed at the reformation. Of the cathedral, which was built of marble,* the choir alone remains. There is ſome commerce in wood, fiſh, tallow, and copper from the mines of Medal and Roras. The other towns of Denmark, as Gluckſtadt, Elſinore, Flenſburg, Kiel, Arhus, &c. have only from 300 to 6000 inhabitants.

Edifices.

The chief public edifices are in the cities. The caſtle and palace of Cronberg, and the two other royal villas in Zeeland, do not merit a particular deſcription, the buildings and gardens being generally in an antiquated taſte. The roads in Denmark and Norway were till lately much neglected, and formed a ſtriking contraſt with thoſe of Sweden.

Inland Navigation.

The chief inland navigation of Denmark is the canal of Kiel, ſo called from a conſiderable town in the north of Holſtein. This canal is intended to unite the Baltic with the river Eydar, which flows into the German ſea. The extent of this important canal is about 20 Britiſh miles and a half; the breadth 100 feet at top and 54 at bottom; the leaſt depth is about 10 feet, ſo as to admit veſſels of about 120 tons.[11] It was begun in July 1777, and was finiſhed in 1785. Jutland being generally a flat country, there is little doubt but great improvements might be effected by draining and canals, on the Dutch plan, were not an abſolute government commonly adverſe to induſtry.

Manufactures and Commerce.

The manufactures of the Daniſh dominions are few and unimportant. A moſt intelligent and inſtructive traveller, Mr. Marſhall, has given an intereſting deſcription of the improvements made by a Daniſh

* By recent accounts, lapis ollaris.

[10] Buſching, Coxe.

[11] Coxe, v. 301.

nobleman,

nobleman, Count Roncellen, who had introduced manufactures of wool, leather, and iron, and founded a village of three hundred houſes in the centre of North Jutland.[12] He was cutting a canal of two miles; and had erected a wharf and docks, where he built his own ſhips, and exported his own manufactures. His improvements in agriculture were equally laudable; and ſuch examples deſerve perpetual commemoration more than the vain heroiſm of war. At Copenhagen are what are called the royal manufactures, in which Mr. Marſhall ſays that 400 looms were employed, from the fineſt woollen cloth uſed at court, to that worn by the ſoldiery. Other manufactures have alſo been recently encouraged by the crown, which has paid more attention to commerce and agriculture than to the arts and ſciences; though the former deplorable ſtate of the roads, in which all travellers agreed, evinced that the Danes had not juſt ideas of improvement. The chief exports of Denmark conſiſt of native products. Jutland with the iſles, Sleſwic, and Holſtein, generally export corn to a conſiderable amount; and the horſes and cattle of the latter province furniſh a ſupply to Holland. The cream coloured horſes of Oldenburg, a ſmall maritime diſtrict in Weſtphalia formerly belonging to the Daniſh kings, who thence derive their origin, are of well known majeſty and beauty. The chief products of Norway are wood, hides, chiefly thoſe of the goat; with ſilver, copper, and iron; while Iceland exports dried fiſh, falcons and hawks, and eider-down. The commerce of this kingdom has been greatly improved ſince the acquiſition of Altona, and the opening of the Kiel navigation. The colonies in the Eaſt and Weſt Indies alſo ſupply ſome reſources.*

MANUFACTURES AND COMMERCE.

[12] Travels, ii. 150 to 204.

* Mr. Marſhall, ii. 28., pronounces Denmark to be in a flouriſhing ſituation; and juſtly warns his reader not to truſt lord Moleſworth, whoſe book is a mere declamation in favour of the whig ariſtocracy, which he confounds with liberty.

CHAPTER IV.

NATURAL GEOGRAPHY.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

CLIMATE AND SEASONS.

THE kingdom of Denmark proper, conſiſting of thoſe ancient ſeats of the Daniſh monarchy, the iſles of Zeeland, Funen, Laland, and Falſter, with others of inferior ſize; and the extenſive Cherſoneſe or peninſula, which contains Jutland, Sleſwic, and Holſtein, may be conſidered as poſſeſſing a humid, and rather temperate climate. Yet the winter is occaſionally of extreme ſeverity, and the ſea is impeded with ice. Norway, chiefly extending along the weſt ſide of the Scandinavian Alps, expoſed to the vapours from the Atlantic, is not ſo cold a region as might be conceived. Finmark indeed feels the utmoſt rigour of winter; while in Iceland, on the contrary, that ſeaſon is unexpectedly moderate, ſo as generally to permit the natives to cut turf even in January.

Face of the Country.

The aſpect of ſuch wide and detached regions may be conceived to be greatly diverſified. The iſle of Zeeland, which is about 700 miles in circumference, is a fertile and pleaſant country, with fields ſeparated by mud walls, cottages either of brick or white waſhed, woods of beech and oak, vales, and gentle hills. The ſame deſcription will apply to Funen, which is about 340 miles in circumference, and which Mr. Marſhall ſays is as well cultivated as moſt of the counties in England. Holſtein and Sleſwick are alſo level countries; and though Jutland preſent many upland moors, and foreſts of great extent, eſpecially towards Aalborg or in the centre of the northern part, yet there are fertile paſtures; and the country being marſhy and not mountainous, might be greatly improved, eſpecially if the proprietors were to reſide

upon their eſtates, inſtead of committing them to the care of ſtewards. Norway is on the contrary perhaps the moſt mountainous country in Europe; but in the ſouth there are tracts of great fertility. Mr. Coxe deſcribes this part as being ſometimes fertile and agreeable; and though often rocky, the ſoil is rich. "The face of the country is prettily ſprinkled with numerous lakes and rivulets, and thickly dotted with cottages, rudely though not unpleaſantly ſituated on rocky eminences, in the midſt of the luxuriant foreſt."[1] The Norwegian Alps are frequently covered with dark foreſts of pines and fir, and the perpetual ſnow of the peaks is not accompanied with the glaciers and other terrors of the Alps. FACE OF THE COUNTRY.

In Holſtein, and the ſouth of Jutland, the ſoil is fertile; and Mr. Marſhall compares the agriculture between Rypen and Warde with that of England, the fields divided by hedges and ditches in excellent order, and ſown with corn and turnips, the tillage being performed with only four oxen. Further to the north cultivation was leſs perfect, with the exception of count Roncellen's eſtate; and the Germans who were invited to Sleſwick and Holſtein had better have transferred their induſtry to the north of Jutland, where for a ſpace of fifty miles Mr. Marſhall only obſerved two ſmall country ſeats; and a few Germans, who had been placed there, confined their labours to the dry ground inſtead of reclaiming the marſhes, which would be far more productive. The agriculture of Zeeland and Funen is applauded by him; and if he had viſited Norway it is probable that he would not have complained of the want of induſtry. In the latter country, though vegetation be in ſome places ſo quick that the corn is ſown and reaped in ſix or ſeven weeks, yet the portion of arable ground is ſcanty, and far from ſufficient to ſupply the conſumption. In the autumnal rains, to which Norway is expoſed, the peaſants dry their harveſt in a method which might be found uſeful in the Scotiſh Highlands, by erecting poles croſſed by others, on which the ſheaves are filed.[2] That mountainous country is however abundant in paſture and cattle; which, as in Swiſſerland, are driven to the heights in ſummer; and a patriotic ſociety has ſo much encouraged agriculture, that within theſe Soil and Agriculture.

[1] v. 31.

[2] See the plate in Pontoppidan's Norway.

fifty

Soil and Agriculture.

fifty years eſtates have riſen near one third in value.[3] In the extenſive iſland of Iceland, there is not much room for agriculture; which has however greatly declined ſince the period of the republic, when treatiſes were written on this intereſting ſubject.

Rivers.

In the kingdom of Denmark proper the rivulets are numerous; but ſcarcely a river of any note except the Eydar, the ancient boundary between Denmark and Germany. Towards the north of Jutland an

Lymfiord.

extenſive creek of the ſea, called Lymfiord, penetrates from the Cattegat to within two or three miles of the German ſea, navigable, full of fiſh, and containing many iſlands.[4] This remarkable inlet, which is as it were a Mediterranean ſea in miniature, might well be expected to enrich the neighbouring country, but ſeems to be neglected, as travellers and geographers are ſilent. There are ſeveral other creeks which are by the Danes ſtyled Fiords, or Firths, but ſcarcely another river worth mentioning; for the Guden, which becomes navigable at Randers, is of a very confined courſe.

In Norway, as in Sweden, the largeſt rivers are called Elven or Elben. Thoſe that riſe in the Alpine chain, and run towards the weſt, have in conſequence but a ſhort courſe; and the chief ports, as in the weſt of Scotland, are ſupplied by creeks or inlets of the ſea; the great depth of the water and height of the ſhore rendering this coaſt not a

Glomen.

little unſafe to navigators. The chief river of Norway is the Glom or Glomen, which is not navigable, but full of cataracts and ſhoals; yet about 50,000 trees are annually floated upon it to Frederickſtadt. Before it receives the Worm from the lake Mioſs, it is as broad as the Thames at Putney;[5] and its rugged courſe muſt render it a tremendous torrent. The Glomen, alſo called the Stor Elv, or great river, ſprings from the lake of Oreſund on the north of the Fœmund, and runs nearly ſouth about 300 Britiſh miles.*

[3] Coxe, v. 18. [4] Buſching, i. 228. [5] Coxe, v. 62.

* In the map by Homann, corrected by Hubner, and prefixed to Pontoppidan's natural hiſtory of Norway, the ſource is very different; and that author joins in the error p. 91. When it is conſidered that the book and the map were publiſhed in 1751, when Linnæus in the adjacent kingdom was diffuſing the light of natural ſcience, the errors of both are truly ſurpriſing. Perhaps the firſt tolerable maps of Norway, known in England, were that given by Mr. Coxe, and that contained in Arrowſmith's map of Europe. But even recent maps have not always been improved by theſe examples.

Next may be named the Dramme, which flows into the weſt ſide of the bay of Chriſtiana, having received the Beina, and other conſiderable ſtreams. Leſs remarkable rivers in the ſouth of Norway are the Louven, the Torriſdals which runs by Chriſtian Sand, and others flowing from numerous lakes. In Finmark the moſt conſiderable river is the Tana, which is followed by the Alten; both riſing in the mountains to the north of Swediſh Lapland, and flowing into the Arctic ocean. Rivers. Dramme.

The lakes in the Daniſh dominions are numerous, the moſt extenſive being in the ſouth of Norway. The lake of Mioſs is about 60 Britiſh miles in length, but the breadth is in general little conſiderable, except towards the centre, where it is from 12 to 18 miles: it contains an iſland about ten miles in circumference, fertile in corn, paſture, and wood.[6] Next is the lake of Rands or Rands-Sion, which is near fifty miles in length, but not more than two in breadth. The lake of Tyri is a beautiful piece of water, about fifteen miles in length and breadth, diverſified with many bays and creeks: the environs are delightful, conſiſting of corn fields, fertile meadows, and hanging foreſts, backed by lofty mountains towering above each other.[7] Other lakes in the ſouth of Norway are thoſe of Ojeren, Or, Kroren, Tonhof, Tind, Huide, Niſſer, Kiel, and Syredal. Further to the north is the large lake of Fæmund, about 35 Britiſh miles in length, by eight at its greateſt breadth: this lake is celebrated by Bergman as being ſurrounded by mountains of great height. Yet further, in a northern direction, are found the lake of Sælbo, through which the Nid paſſes to Drontheim; and the lakes of Beitſtadt and Snaaſen. In Norland is that of Rys: and eaſtern Finmark preſents that of Paſvig. Lakes. Mioſs. Rands. Tyri. Fæmund.

In the kingdom of Denmark proper there are no heights, which can aſpire to the name of mountains; but Norway is almoſt wholly an Alpine country. The grand chain, which divides that kingdom from Sweden, is known by diſtinct appellations as it paſſes through different provinces. The mountains of Joglefeld may be regarded as its ſouthern extremity, which does not here extend to that point of Norway called Cape Lindes, the Naze of ſeamen, but branches off towards the eaſt. Proceeding northwards Joglefeld is ſucceeded by Buglefeld, and Hekle- Mountains. Norwegian Chain.

[6] Coxe, v. 59. [7] Ib. 53.

feld,

Mountains. feld. Hardanger Feld forms a more extenſive denomination, and detaches a branch towards the S. W. Under the parallel of 61° the chain aſſumes the name of Filifeld, followed by Sognefeld, and Langfeld, which terminates a little beyond the 62° of north latitude. The chain now aſſumes a winding direction from weſt to eaſt, and this part, which is eſteemed one of the higheſt, is ſtyled Dofrafeld. Again turning to the N. E. we arrive at the parts towards the parallel of Drontheim, which are generally reckoned the moſt elevated, for towards Lapland the mountains decline in height. The ſucceſſive names of this central portion are Rudfeld, Skarsfeld, and Sulafeld.* Jomafeld and Borrafeld, and ſome other local appellations, are continued by the general name of the mountains of Kolen, which paſs along the eaſt and ſouth of Daniſh Lapland.

In a more general point of view, the ſouthern part of the Scandinavian chain, running nearly N. and S., and terminating at the province of Romſdal, is called Langfiall, or the Long Mountains. Hence the part called Dofrafiall extends towards the eaſt, ending above the lake of Aurſund or Oreſund; where it again proceeds almoſt due north. Here alſo a conſiderable branch proceeds by Swucku, &c. towards Sweden.† The third part of the range, from the north of Oreſund and the vicinity of the copper mines of Roras, is called the chain of Kolen, extending between Norway and Swediſh Lapland, and afterwards bending, in the form of a horſe ſhoe, on the ſouth of Finmark.[8]

Height. The height of theſe mountains was as uſual extremely exaggerated, and compared with the Swiſs Alps, till more exactneſs was introduced into Orology. Mr. Pennant[9] affords the moſt recent information on

* The fabulous Pontoppidan calls this central chain (p. 41.) Sevebierg, or the ſeven mountains; and in his map the eaſtern parts towards Sweden are called Daarfeld. The name of Sevebierg, or the ſeven mountains, is palpably local, and has no reference to the general chain; though ſome writers affect to regard it as the ſame with Pliny's Sevo, which was in Germany. This term is on the contrary not only local, but recent, and perhaps only applies to the hills called the Seven Siſters, p. 46. It is unknown to former writers; and he confeſſes p. 41. that the only general name is Langfeld, or the Long Mountains. See Schoning's map of Norway in the middle ages.

† It is to this laſt only that Pontoppidan gives the name of Sevebierg.

[8] Buſching, i. 378. [9] Arctic Zoology, i. cviii.

the

the ſubject. "Mr. Aſcanius, profeſſor of mineralogy at Drontheim, aſſures me that, from ſome late ſurveys, the higheſt in that dioceſe are not more than ſix hundred fathoms above the ſurface of the ſea; that the mountains fall to the weſtern ſide from the diſtance of eight or ten Norwegian miles;* but to the eaſtern from that of forty. The higheſt is Dovre-fiæl in Drontheim, and Tille in Bergen. They riſe ſlowly, and do not ſtrike the eye like Romſdal-horn, and Hornalen, which ſoar majeſtically from the ſea. Profeſſor Ritzius of Lund acquaints me that Kinnekulle, in Weſtro-Gothia, is only 815 Engliſh feet above the lake Wenern, or 931 above the ſea. He adds that the following have been only meaſured to their baſes, or to the next adjacent waters: Areſkutan, a ſolitary mountain of Jæmtland, about four or five Swediſh miles from the higheſt Alps, which ſeparate Norway and Sweden, is ſaid to be 6162 Engliſh feet above the neareſt rivers; Swuckuſtoet within the borders of Norway, 4658 above lake Famund, and that lake is thought to be 2 or 3000 above the ſea; and finally Sylfiællen, on the borders of Jæmtland, is 3132 feet perpendicular from the height to the baſe. By ſome late experiments the higheſt mountains of Sweden, between lat. 63 and 64°, have been found to be 6652 feet above the ſurface of the Baltic;† but no trees will grow on them at little more than half that height."‡

Mountains.

Areſkutan.

Swuckuſtoet.

Sylfiællen.

* Of 18,000 feet each.

† "Mr. Tornſten in Act. Reg. Ac. Holm."

‡ Here would ſeem to be ſome miſtake on the other ſide; and it is often to be regretted that Mr. Pennant's accuracy is not equal to his induſtry. Bergman computes the height of Swukku at more than 9000 feet above the ſea; and ſays that it yields in height to the Norwegian Alps, which are here eſtimated by Aſcanius, or miſtaken by Pennant, at only 3600 feet above the ſea! It is probable that for 600 we ſhould read 1600 fathoms, which would yield 9,600 feet. Upon the whole it would appear that the Scandinavian chain is inferior in height to the Pyrenees, or even to the Carpathian.

Buſching, i. 331, ſays that the mountains Tind and Goule, in the S. of Norway, are the higheſt; but in this he errs in copying Pontoppidan, who ſays they are the higheſt in that quarter. The higheſt ſharp ſummits are, in Norway, as in Swiſſerland, called Horns, as Hornalen in Nordfiord, Sneehorn and Skopſhorn in Sundmoer, Romſdal-horn, and others. Many lofty mountains branch out on the weſt towards the ſea.

Of the high mountain Wigeln, and the lake of Oreſund, there is a view in Hermelin's Atlas. There are alſo views of ſome Swediſh and Laponic mountains, as Ruten near the lake Malmagen; of the high ridge between Herdal and Norway, which is patched with perpetual ſnow; and ſome in Lulea Lapmark. If there be any glaciers in Norway or Lapland they have eſcaped Scandinavian reſearch, and the aſpect of the mountains rather reſembles thoſe of Scotland than of Swiſſerland.

Mountains. Conſtruction.

The conſtruction of the Norwegian mountains has been little explored, nor is it underſtood whether the chief heights be calcareous like thoſe of the Pyrenees, or granitic as is rather to be conceived. Some conſiderable mountains conſiſt of ſandſtone; but we are equally ignorant whether this be the ſiliceous, the argillaceous, or the calcareous ſandſtone. Norway abounds in beautiful marbles of various kinds, whence it appears that a conſiderable part is calcareous; and Pontoppidan has engraved a precipice full of large ſhells. The lapis ollaris, which Pontoppidan calls keegſteen, is found in great quantities, and with it were built the cathedral of Drontheim, and other edifices.[10] This is generally found in the vicinity of granite; which laſt ſeems to be the pebble ſtone of that ignorant author. Aſbeſtos and amianthus alſo indicate granite; and rock cryſtals are found of great ſize and beauty, with talc, garnets, and amethyſts. Chalk and flints are unknown. Further illuſtrations will ariſe in ſpeaking of the mineralogy.*

Foreſts.

There are ſome woods in the Daniſh iſles, and foreſts in Jutland. The Norwegian mountains are generally clothed with pines and firs; and almoſt the whole country may be regarded as a foreſt, which ſupplies Europe with maſts, and other large timber. The mountains of Scotland were once equally covered, though now denuded, nature ſowing trees exceedingly thick, while man plants them ſo thin that the plantation periſhes for want of mutual protection. Norway may in this reſpect recall a juſt image of Britain as it appeared to the Romans.

Botany.

The botany of Denmark proper does not materially differ from that of the other northern provinces of the German empire, which has already been ſlightly ſketched in the account of Pruſſia, and will be hereafter noticed more minutely when deſcribing the other ſtates of the Germanic body. The botany of Norway will be incorporated with that of the reſt of Scandinavia under the article Sweden. All that is neceſſary therefore in this place is to mention thoſe plants natives of

[10] Pontoppidan, i. 166. ii. 276.

* Bergman, p. 63, obſerves that many of the mountains of Norway are of pudding-ſtone, ſometimes of quartz pebbles, united by grey micaceous cement (the ſame ſubſtance occurs in the Orkneys). Some are of hornblende ſlate in which garnets appear. Ib. 74.

Denmark,

Denmark, which are either not at all or but ſparingly found on the other ſide of the Baltic. Botany.

Denmark, together with its German dependencies, is for the moſt part a flat country, and a large proportion of its ſurface is taken up with marſhes and lakes: here and there occur ridges of low rocks, but no mountains even of the third magnitude are to be met with: the remainder of the territory is devoted to cultivation and paſturage, of which the moſt celebrated grazing tracts are included in the duchy of Holſtein.

The ſea ſhore affords the beautiful pulmonaria maritima, *ſea lungwort;* and cochlearia Danica, Daniſh *ſcurvy-graſs*. The dry open hills produce anemone pulſatilla, *paſque flower;* dianthus ſuperbus, *fringed pink;* delphinium conſolida, *larkſpur;* gentiana filiformis; and aſtragalus Danicus. The woods and thickets yield cornus ſanguinea, *red dog-wood;* pulmonaria officinalis and anguſtifolia, *common* and *narrow-leaved lungwort*; impatiens noli-me-tangere; and the rare ſerapias rubra, *red helleborine*. The marſh ditches abound with ſtratiotes aloides, *water ſoldier;* and the meadows and hedge-ſides furniſh ornithogalum luteum and nutans, *yellow* and *nodding ſtar of Bethlehem;* ranunculus lanuginoſus, *woolly crowfoot;* and oenothera biennis, *evening primroſe*.

The Daniſh dominions being of ſuch great extent, and variety of climate and aſpect, there is a great diverſity in the animal productions. The horſes of Norway and Iceland are as remarkable for diminutive ſize, as thoſe of Holſtein and Oldenburg* are for the contrary quality. Among the more peculiar animals may be firſt named the rein deer, common in Finmark and throughout Lapland. This animal reſembles a ſtag, but is ſtronger; and the deep diviſion of his hoofs is adapted to tread on the ſnow, being ſuited by Providence to a cold climate, as the camel is to the hot deſert. The antlers of the rein deer are longer and more branched than thoſe of the ſtag, and they alſo decorate the brows of the female. Theſe animals are ſtill numerous in a wild ſtate, though the Laplanders have reclaimed great numbers, which ſupply the place Zoology. Rein deer.

* Oldenburg has been recently aſſigned to the younger branch of the houſe of Holſtein Gottorp. Bruns, Geog. &c. Rieſbeck, iii. 121. ſays that the detached principality contains 75,000 ſouls; the revenue 40,000l.

Zoology. of horſes and cattle. The elk is a more ſouthern animal, and ſometimes appears in Norway, which is infeſted by the bear, the wolf, and the lynx. The glutton is alſo rather a peculiar animal; and the beaver conſtructs his manſion in Norway with the ſame ſkill as in N. America.

Lemming. The lemming, or Norwegian mouſe, proceeds from the ridge of Kolen, and ſometimes ſpreads deſolation, like the locuſt. Theſe animals appear in vaſt numbers, proceeding from the mountains towards the ſea, and devouring every product of the ſoil: it would ſeem that after conſuming every thing eatable in their courſe, they at laſt devour each other. This ſingular creature is of a reddiſh colour, and about five inches in length. Norway alſo boaſts of ſome peculiar birds, as the picus tridactylus, and the tetrao lagopus. The ſnake called aſpis is alſo found there. In Daniſh Lapland the ſquirrel, which is red in the ſummer, in the winter becomes grey."[1] The author laſt quoted maintains the fable of the kraken; and his deſcription, derived from the natives of Norland and Finmark, correſponds with that of Pontoppidan. The ſalmon ſupplies a conſiderable part of the Laplander's food; and vaſt numbers are tranſported on rein deer from the ſhores of the Tana.

Finmark. Hares are alſo common in that remote region: and the bear, lynx, and fox, are leſs welcome viſitants; nor are the glutton and the beaver there unknown. About Roras in Norway the latter animal is ſometimes found white.

Mineralogy. The mineralogy of the Daniſh dominions is chiefly reſtricted to Norway, for in Jutland and the iſles no important diſcoveries have ariſen, though it be probable that iron, and perhaps coal, may be found. Jutland ſupplies tripoly and fullers' earth, with ſome alum, and vitriol. The iſle of Moen has hills of chalk; and porcelain clay is found in Bornholm. Theſe regions ſeem chiefly calcareous, yet freeſtone is rare. Norway on the contrary abounds in various metals. About the year 1645 ſome gold ore was found near Arindal, of which ducats were ſtruck. But in gold Norway yields greatly to the Swediſh mines of Adelfors, and only claims the ſuperiority in ſilver, the mines of Kongſberg, about 40 Britiſh miles to the S. W. of Chriſtiana, having been long reputed the richeſt in Europe; and one maſs of native ſilver

[1] Leems, p. 219.

in

in the royal cabinet weighs 409 marks, being worth 3000 rix-dollars or 600l.[12] These mines are minutely described by Bergman, who informs us that the rock consists of vertical banks of micaceous schistus, with garnets, limestone, and quartz. The richest veins are in those of a greyish quartz mingled with small black mica, and reddish petrosilex; but especially in a fine-grained white quartz, and a little calcareous earth, or where the quartz and mica are in alternate strata; the thickness of these banks or layers varying from an inch to three fathoms; and some of them are impregnated with iron. They are passed transversely by the veins of metal, from half an inch to more than two feet in thickness, sometimes accompanied with large grained limestone, but more often with spar; and sometimes with quartz, fluors, white, blue or violet selenite, and fossil cork, and sometimes with pyrites, yellow copper ore, and blende.[13] The ferruginous layers are the most productive. These mines were discovered in 1623 by two peasants, who were diverting themselves with throwing stones; and in consequence the town of Kongsberg was founded. They are worked by 36 shafts, and used to yield about 70,000l. annually, when 4000 men were employed; but recently 2400 have removed to the cobalt mines at Fossum, 20 miles to the north, and it is supposed that the produce barely defrays the expence. Yet they supply the mint with currency, the largest coin being of eight Danish skillings, or fourpence sterling; and it is esteemed a peculiarity of this mine, that it may be little productive during a year or two, when suddenly a rich vein is discovered which amply repays the loss of labour.[14] Kongsberg is a flourishing town of 6000 inhabitants, situated amidst hills and rocks, which branch off from the great Alpine chain, being about 80 British miles S. E. of the Langfeld: the river Louven runs through the town, in a series of small picturesque cataracts.

MINERALOGY. Silver.

Norway also possesses other silver mines at Iarlsberg in the same region, about 30 miles to the N. E., discovered in 1726, but of small account.

[12] Coxe, v. 45.

[13] Journal des Mines, No. xvi. p. 50.

[14] Pontop. i. 183, &c. Coxe, ut supra.

The

MINERALOGY.

Copper.

The important copper mines of Roras, about 68 Britiſh miles S. E. of Drontheim, were diſcovered in 1644. They are in the ſouthern ſlope of the chain of Dofra, in a rock of what the Germans call hornſchiffer, or hornblende ſlate, yet Bergman mentions quartz and mica as ingredients; and he adds that the gangart is *hornberg* or hornblende, "of ſo fine a grain that neither the quartz nor the mica can be diſtinguiſhed in its texture."* The veins are from ſix inches to ſix ells in thickneſs; and the ore of a pale yellow. The mine of Storward is in a high mountain; the rock being grey gneiſs, which is followed by a blackiſh ſteatite. In general the mines of Roras are very productive, and a ſource of conſiderable revenue. Other copper mines are at Quickne and Selboe, about 50 miles to the eaſt of Drontheim, and at other places.

Cobalt.

The mines of cobalt at Foſſum, a recent diſcovery, muſt not be paſſed in ſilence. This metal yields ſmalt, or powder blue, uſed in painting pottery and porcelain, and in colouring ſtarch; and the mine is ſuppoſed to produce a clear annual revenue to the crown of about 15,000l. Near it is a rich vein of quartz, containing large maſſes of talc.[15]

Iron.

But the iron mines of Norway are eſteemed the moſt profitable. They are chiefly ſituated not far from Arindal, in the ſouthern province of Chriſtianſand; and near Skeen, between Arindal and Kongſberg † Lead appears in the vicinity of Kongſberg; and there are alum works near Chriſtiana. Norway produces abundance of marble, with ſome alabaſter, and lapis ollaris. Rock cryſtals occur of a large ſize, often brown or yellow like thoſe of Bohemia and Piedmont, the Cairngorm ſtones of Scotland. In Iceland are found many volcanic productions, particularly black obſidian. The iſles of Ferroe produce agate, jaſper, and beautiful zeolites. Jade and magnets are alſo found in Norway; with

* Such indications are mentioned, as they may lead to diſcoveries in other countries; but Bergman's account is far from the accuracy of modern mineralogy, and his deſcriptions ſeem neither to refer to hornblende nor petroſilex. From Raſpe's Ferber, 327. it appears that petroſilex was conceived to be quartz and mica intimately blended, ſo as not to be diſtinguiſhed by the eye. It is equally difficult to explain Buſching's meaning, i. 340, when he ſays the chief copper mines are at Werdenfiels. Roras is in Guledal.

[15] Coxe, v. 49.

† According to Buſching, i. 341, ochre is found near Wardhus, in Finmark, of a beautiful ſky blue, probably like that of Elba, and the ſign of a rich iron mine.

curious garnets, eſpecially the green, which are little known in other regions. MINERALOGY.

In mineral waters the Daniſh dominions are very deficient; and thoſe diſcovered in 1768 at Oerſten in the Sondmoer appear to be little frequented. Mineral Waters.

While the ſouthern parts of the Daniſh dominions preſent few natural curioſities, the northern provinces afford many ſingular features. The Moſkoeſtrom, or Malſtrom, is a remarkable whirlpool off the ſhore of Norland, which will involve boats, and even ſhips; nay the bellowing ſtruggles of the whale have not always redeemed him from the danger: the bottom is full of craggy ſpires, and the noiſe truly tremendous. On the ſouth of the Ferroe iſles, there is another dreadful whirpool. The volcanoes of Iceland may alſo be claſſed among the grandeſt features of nature. Among theſe Mount Hekla is the moſt remarkable, being ſituated in the ſouthern part of the iſland, about 20 Britiſh miles from the ſea, above which it riſes to the height of about 5000 feet. The ſummit is covered with ſnow, except ſome ſpots where the heat predominates. The craters are numerous, but the eruptions rare; there having only been ten from the year 1104 to 1693, after which it remained quiet till 1766, when it emitted flames and lava. The mountains of Krabla near Myvatn in the N. W., and of Kattlegia, were more known than Hekla by their eruptions in the eighteenth century. The boiling ſprings of Iceland preſent a ſingular phenomenon: that of Geyſer to the north of Skallholdt is the moſt remarkable, riſing from an aperture 19 feet in diameter, and ſpringing at intervals to the height of 50 or even 90 feet.[15] Of ſmaller conſequence are ſeveral pictureſque ſcenes in Norway, as the hills called the Seven Siſters in Helgoland in the parallel of Tornea. In the ſame diſtrict is the rock of Torghatten, with a perforation of great length and diameter, through which the ſun may at times be ſeen. At Dolſteen, near Herroe in Sundmoer, is a cavern of great length; and at Limur, not far from Ourſkoeg, is another cavern above a ſtream, which ſeems formerly to have flowed through this ſuperior channel. About 20 miles to the north of Bergen, the rocks abound with ſingular petrifactions. The Natural Curioſities. The Malſtrom. Mount Hekla.

[15] Van Troil, 260.

mountains

NATURAL CURIOSITIES.

mountains are ſometimes ſplit and engulphed by ſubterranean waters, of which Pontoppidan relates ſome inſtances, more to be credited as a ſimilar event recently happened in the ſouth of France. The farm of Borre, in the province of Chriſtiana, was in 1703 ſwallowed up with all its buildings, and there now remains only a chaſm full of ruins and ſand.[17]

DANISH ISLANDS.

THE prime ſeat of the Daniſh monarchy having ever been in the iſles of Zeeland, Funen, Laland, Falſter, and the others of that groupe, they have been conſidered in the general deſcription of the monarchy. In the eaſt the furtheſt iſle belonging to Denmark is that of Bornholm, a ſmall but fertile ſpot conquered by the Swedes in 1645, and ſurrendered to them by the treaty of Roſkild, 1658; but the inhabitants revolted the ſame year, and reſtored their iſle to the Daniſh domination, under which it has ſince continued.

Off the weſtern coaſt of Jutland are the iſles of Nordſtrand, Fora, Sylt, Rom, Fanoe, and others, which with Helgeland were known to the Romans; and the writers of that nation appear often to have confounded them with ſome of the Orkneys, and even with the iſlands in the Baltic.*

The Norwegian coaſt preſents one continued ſeries of ſmall and unimportant iſlands, moſt of them indeed uninhabited. Among a few

[17] Buſching, i. 360.

* Theſe iſles have ſuffered greatly by the fury of the ocean Nordſtrand, after repeated attacks in the years 1350, 1354, &c. was at length almoſt totally ſwallowed up in 1634. Such an inundation aroſe on the 11th of October, at ten o'clock in the evening, that there periſhed 6208 perſons with 50,000 cattle; 1332 houſes, 30 windmills, and 6 churches were ſwept away by the waves. There remained but a high part of the iſle now called Pelworm. Helgeland, which has been ſubject to the Danes ſince the year 1714, has alſo been diminiſhed by repeated aſſaults of the ocean. Buſching, i. 293, 294.

worthy of mention may be named Karm, B mmel, Sartar, Hitteren, and others at the entrance of the gulph of Drontheim: the Vikten or Viktor iſlands are followed by thoſe of Loffoden, the moſt numerous and extenſive, and noted for the whirlpool of Malſtrom. Among the dreary iſles on the Laponic ſhore may be named Soroe and Mageroe, that of Wardhus, where there is a garriſon in the Arctic ocean; and the iſle or peninſula of Fiſkeroe, part of which belongs to Ruſſian Lapland. Isles.

The iſles of Vikten or Viktor produce oats and barley; and it was from them that the powerful Rollo ſailed to France. Thoſe of Loffoden have excellent fiſheries, and the paſturage ſuffices for numbers of ſheep. The iſle of Karm is chiefly remarkable for the high mountain of Augvald. The Norwegian iſles are in general mountainous or craggy, like the correſponding coaſt, with precipitous rocks, and a ſea from 100 to 300 fathoms deep waſhing their baſes. Between them are numerous narrow creeks, overſhaded by vaſt heights like thoſe of the ſhore, and guarded as it were by innumerable ſmaller iſles, and deſart rocks, haunted by ſcreaming ſea-fowl.

For many years the Norwegians held the iſles of Orkney and Shetland, which laſt was ſtyled by them the Land of Hialt, from an adventurer ſo called, whence the corrupt names of Zetland, Yetland, and Shetland. The Ferroe iſles remain an appanage of the Daniſh crown: they are ſeventeen in number, and not unfertile, producing ſome barley, and abundant paſturage for ſheep. Small junipers, ſtinted willows, and birches, alone bear a diminutive image of trees. They were diſcovered prior to Iceland, in the ninth century; and export feathers, eiderdown, caps, ſtockings, and even ſalted mutton, and tallow. Beautiful calcedonies and zeolites are found in the Ferroe iſles; but there ſeems no reaſon to believe that they ever were volcanic. The inhabitants do not exceed 5000. Ferroe Iſles.

The large and celebrated iſland of Iceland may be regarded as 260 Britiſh miles in length from the moſt weſtern cape to the moſt eaſtern, and about 200 in breadth from N. to S., but the inhabitants do not exceed 50,000. The government was an ariſtocratic republic for about 387 years, till in 1261 it ſubmitted to Norway. The maps of this Iceland.

Isles. country are far from being perfect; and the like complaint might juſtly be extended to the Daniſh dominions in general; but as far as can be judged the chief range of mountains runs, like the Carpathian, from the S. E. to the N. W., with ſome branches diverging N. E. This iſland forming ſo extenſive a portion of the Daniſh dominions, ſeveral circumſtances concerning it have been given in the general narration. While it abounds in ſulphur and ſubterranean fires, and volcanoes appear in every quarter, it would be too bold a theory to ſuppoſe that ſo wide an expanſe was ejected from the ſea, not to mention that the ſurturbrand, or carbonated wood, found at a great depth, evinces a moſt remote vegetation. The higheſt mountains clothed with perpetual ſnow are ſtyled Yokuls; and of theſe Snæfial, hanging over the ſea in the S. W. part of the iſland, is eſteemed the higheſt, being computed at 6860 feet.[1] The mountains are ſaid to be chiefly ſand-ſtone, pudding-ſtone with petroſilex, ſteatite, and argillaceous ſchiſtus. The chief rivers of Iceland are in the eaſt; the Skalfanda, the Oxarfird, and the Brua, all flowing from the S. to the N. Some are white with lime, others ſmell of ſulphur. The calcareous ſpar of Iceland is celebrated for its double refraction ſince the days of Newton: calcedony, zeolite, lava, pumice, and malachite, or copper ſtalactites, are among the mineral productions. In the middle of the fourteenth century this iſle was greatly depopulated by a peſtilence called the Black Death.* A volcanic iſland recently aroſe to the ſouth of Iceland, but afterwards diſappeared. From Iceland a colony paſſed to Greenland, a ſhort courſe of about 200 miles; but the Daniſh colony in Greenland has been long explored in vain, the eaſtern coaſt on which it was ſettled being ſince blocked up by the ice. This barbaric colony was little aware that its ſettlements belonged to another quarter of the globe, Greenland being now univerſally conſidered as a vaſt peninſula attached to the continent of America.

[1] Pennant, A. Z. lxiii.

* Iceland is ſaid to have ſuffered greatly by commercial monopoly, but the company was ſuppreſſed in 1759. Buſching, i. 417. Every benefit ought certainly to be extended by the Daniſh government to the poor inhabitants of ſo remote and barren a country.

SWEDEN.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

SWEDEN, in the native language Suitheod, and more modernly Sweireke, appears to be a very ancient appellation, and is ſaid, by the northern antiquaries, to imply a country whoſe woods had been burnt, or deſtroyed. The name ſeems as ancient as the time of Tacitus,[1] who, after deſcribing the Suiones who lived in iſlands of the ocean, paſſes to the Sitones, and afterwards to the nations at the further end of the Baltic. It is evident that Cluverius has in this, as in other inſtances relative to the north of Europe, been blindly followed by D'Anville, and other geographers, who ſuppoſe that the Sitones are the Danes or Norwegians, and the Suiones the Swedes. The learned Huet,[2] on the contrary, well perceived that the Suiones muſt be on the weſt; though he err in placing them in Norway, which was almoſt unknown to the ancients. The Sitones muſt have dwelled in the ſouthern provinces of Sweden; and the name either have been derived from Sictuna, the old name of the chief town, as Names.

[1] German. c. 44, 45.

[2] Commerce des Anciens, ch. xlii. p. 234.

Names. appears from Adam of Bremen, or from Suitheod the native term, ſoftened as uſual by the Roman enunciation.

Extent. The kingdom of Sweden is of very conſiderable extent; being, from the moſt ſouthern promontory of Scone, to the northern extremity of Swediſh Lapland, not leſs than 1150 Britiſh miles in length; and from the Norwegian Alps to the limits of Ruſſia about 600. The contents in ſquare miles have been computed 208,912; and the inhabitants being ſome years ago ſuppoſed 2,977,345, there will be fourteen to the ſquare mile, including Swediſh Pomerania computed at 1440 ſquare miles, and 103,345 inhabitants.

Original Population. As there is no evidence that the Celts ever penetrated to Scandinavia, the firſt population appears to have conſiſted of Fins, who, perhaps ſeven or eight centuries before the Chriſtian æra, were ſupplanted by the Goths, mythologically repreſented as having been conducted by Odin, or the god of war. Theſe Goths gradually proceeded from their native ſeats in the north of Perſia, and along the Euxine; and while one diviſion paſſed to the weſt, or into Germany, another in a northern progreſs reached Scandinavia, where no foreign conqueſt having ſince extended, the population continues purely Gothic in the ſouthern parts; while in the north there are remains of the Fins; and above them the Laplanders, a native diminutive race reſembling the Samoieds of the north of Aſia, and the Eſquimaux, and Greenlanders, Arctic races of America. If any iſles exiſt near the ſouth pole, it is probable that the inhabitants will be found of diminiſhed ſize, and manners reſembling thoſe of the northern progeny. The Laplanders are however ſuperior to the Samoieds, or Eſquimaux, becauſe they have intermarried with the Fins, a race of greater dignity; and their language being originally very rude and barren, as their wants and ideas were few, they have in a great meaſure adopted that of the Fins their neighbours.

Progreſſive Geography. Only the ſouthern parts of Scandinavia being known to the ancients, its progreſſive geography is rather obſcure. The only people there ſituated

ſituated known to Tacitus were the Sitones. Pliny appears to have confounded the knowledge of the ancient Greeks concerning Britain and Ireland, with that of the Romans concerning the Baltic; but he expreſsly names Scandinavia, a part of which was inhabited by the Hilleviones, perhaps in the ſouth of Norway, or in Halland, while his Eningia is probably the ſouth weſtern ſhore of Gothland, which the Romans, deceived by the intervening gulph of Chriſtiana, ſuppoſed to be another iſland. Ptolemy mentions five or ſix tribes, among which are the Gutæ of Gothland, as inhabiting the portion of Scandinavia known in his time; which, from the ſize he aſcribes to it, could not have paſſed the lakes Wenner, and Weter. His four Scandinavian iſlands are evidently thoſe of Zealand, Funen, Laland, and Falſter. After this period there is little progreſs in Scandinavian geography till the time of Jornandes, in the ſixth century, who deſcribes Scanzia, or Scandinavia at ſome length, and mentions various nations by whom it was inhabited.* The next notices are due to the voyages of Ohter, recited by our great Alfred; and the more certain and general knowledge begins to dawn with Adam of Bremen, and the Icelandic hiſtorians. Progreſsive Geography.

The following ſeem to conſtitute the chief hiſtorical epochs of Sweden. Hiſtorical Epochs.

1. The early population by the Fins and Laplanders.

2. The conqueſt by the Goths.

3. What little knowledge the ancients poſſeſſed concerning the ſouth of Scandinavia.

4. The fabulous and traditional hiſtory, which begins about the year of Chriſt 520, and includes the conqueſt of Sweden by Ivar Vidfatme king of Denmark about A. D. 760. Hence there is an obſcure period till the reign of Biorn I, A. D. 829, commemorated, with his immediate ſucceſſors, by Adam of Bremen.

5. The conqueſt of Denmark by Olaf II about the year 900.

* The names are corrupt, but might like the whole of this author, be greatly improved from the Ambroſian MS., whoſe various readings are publiſhed by Muratori in the firſt vol. of his Italian hiſtorians. In a new edition that MS. ſhould be adopted as the text, and the few various readings that are worth preſervation ſhould be given on the margin.

6. The

Historical Epochs.

6. The reign of Ingi the pious, A. D. 1066, after which the hiſtory is ſufficiently clear as the Daniſh is after Gormo A. D. 920. Lagerbring, one of the beſt native hiſtorians, divides the ancient kings into the Ynglingian race the moſt ancient in traditional report; and which terminated at the conqueſt by Ivar Vidfatme, who was ſucceeded by his grandſon Harold Hildetan, and his great grandſon Sigurd Ring: followed by another branch called the race of Sigurd.

7. The partial converſion of Sweden to Chriſtianity, in the reign of Olaf III, A. D. 1000; but more than half a century elapſed before Paganiſm can be conſidered as finally abandoned, in the reign of Ingi the pious; whoſe father Stenkil is regarded as the founder of a new dynaſty, though he ſprung from the houſe of Sigurd. But the crown was now conſidered as having become elective.

8. The acceſſion of the Folkungian branch, about the middle of the thirteenth century.

9. The Swedes diſcontented with their king Albert of Mecklenburg, in 1388 elect as their ſovereign Margaret heireſs of Denmark and Norway. Thus ended the Folkungian race: and by the celebrated treaty of Calmar, A. D. 1397, the three kingdoms of the north were ſuppoſed to be united for ever. But after the death of Margaret in 1412, the Swedes began to ſtruggle for their liberty; and in 1449 Karl or Charles VIII was elected king of Sweden: having aſſailed the property of the church, he was forced to leave the kingdom 1457, but was afterwards reſtored.

10. The ſtruggles between Denmark and Sweden, till the cruel and tyrannic reign of Chriſtiern II, king of Denmark, Norway, and Sweden.

11. Tyrants are the fathers of freedom. Guſtaf Waſe, whom we ſtyle Guſtavus Vaſa, delivers his country from the Daniſh yoke, after a conteſt which forms one of the moſt intereſting portions of modern hiſtory. The revolt may be conſidered as having commenced when Guſtaf appeared at Mora, in Dalecarlia, A. D. 1520, and completed three years afterwards, when he entered Stockholm in triumph. Diſſatisfied with the power of the clergy, which had repeatedly ſubjugated the kingdom to Denmark, this great prince, 1527, introduced the Re-

formed religion; and died in his ſeventieth year, Sept. 1560, after a glorious reign of thirty-ſeven years. HISTORICAL EPOCHS.

12. The reign of Guſtaf Adolph, or Guſtavus Adolphus, A. D. 1611—1631. Auſtria, Spain, and the other Catholic kingdoms, having conſpired to extirpate the proteſtant religion in Germany, this king was invited to aſſiſt the reformed; and carried his victorious arms to the Rhine, and the Danube. His daughter Chriſtiana, a pedant in petticoats, having formed a claſſical attachment to Italy, abandoned the Swediſh throne, and embraced the Catholic religion, which her father had ſo ſtrenuouſly oppoſed.

13. The reign of Charles XI, 1660—1697, when the arts and ſciences began to flouriſh; and the power of the kingdom was carried to its utmoſt height. This reign of ſolid beneficence was followed by the calamitous ſway of that madman Charles XII, whom Pope was ſo ill informed as to aſſimilate with Alexander the Great, whoſe conqueſts were conducted upon principles wholly the reverſe, and were crowned by eſtabliſhments directed by an enlarged mind, capable of views of eternal benefit and duration.

14. After the weak reign of Charles XII, Sweden ſunk into political humiliation; and is now regarded as little better than a province of Ruſſia, to which diſgrace the Swediſh ariſtocracy as naturally tends as that of Poland. In a poor ſtate, under that form of government, it is natural that the leaders ſhould ſell their country to a neighbouring power, except ſeverely guarded as at Venice; and the revolution under Guſtaf III 1772 muſt be conſidered as beneficial to Sweden. For the Ruſſians, by the corruption of the ariſtocracy, had almoſt ſubjected the kingdom: when the ſovereign, aſſiſted by the counſels and money of France, then inimical to Ruſſia the ally of England, accompliſhed his victory over the nobles. The aſſaſſination of that prince, and the ſubſequent events are little momentous in a general point of view; and, though more free from Ruſſian intrigue, Sweden bends in terror before that powerful name.

The ancient monuments of Sweden conſiſt chiefly of judicial circles, and other erections of unhewn ſtone, followed by the monuments inſcribed ANTIQUITIES.

Antiquities. inſcribed with Runic characters, ſome of which are as recent as the fifteenth century, and none of them can ſafely be dated more anciently than the eleventh. Not far from Upſal is the moraſten, or ſtone on which the king uſed to be enthroned, as the old Scotiſh monarchs were at Scone. The ancient temples, called Skior, or Skur, were of wood, and have conſequently periſhed. Of the old churches and caſtles, erected ſince the uſe of ſtone, Dahlberg has engraved many ;[3] and ſome of the latter are remarkable for their reſemblance to what are called Pictiſh caſtles in Scotland.

[3] Suecia antiqua et hodierna.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenue.—Political Importance and Relations.

Religion. Eccleſiaſtic Geography.

THE religion of Sweden is the Lutheran, and this kingdom has retained an archbiſhoprick, a pre-eminence aboliſhed in Denmark; with thirteen prelacies. The pariſhes amount to 2,537. The prieſts are computed at 1378; with 134 vicars, and 192 prepoſiti, or inſpectors.[1] Some of the pariſhes are very extenſive, as that of eaſtern Bothnia, which is about 150 miles in length by 48 in breadth; and another pariſh in Lapland is ſtill larger. A conſiſtory of the clergy of the dioceſe elects the archbiſhops, and the biſhops, by preſenting three to the king for his nomination. Some of the pariſhes are under the royal patronage; others in the gift of individuals: but many are called conſiſtorial, and the prieſt is appointed by the votes of his brethren.

Government.

The revolution of 1772 pretended to reſtore the government to the form eſtabliſhed by Charles XI; and which had lapſed into a factious mixture of ariſtocracy. But by the act of union, 1789, the conſtitution became an abſolute monarchy; the monarch having arrogated not only the rights of peace and war, and the adminiſtration of juſtice, but the impoſition of taxes, without the conſent of the diet, which cannot deliberate on any ſubject till it be propoſed by the ſovereign. The diet conſiſts of nobles, and landed gentlemen, clergy, burgeſſes, or deputies of towns, and thoſe of the peaſantry. Each of the four ſtates has a ſpeaker; the archbiſhop of Upſal being always the ſpeaker of the clergy, while the king nominates the others. The diet of 1786

[1] Olivarius Le Nord Litteraire, No. 12.

Government. consisted of 49 counts, 136 barons, 188 knights, 396 gentlemen, 51 ecclesiastics, 94 burgesses, and 165 deputies of the order of peasants.[2] As the monarch is not opulent, it is evident that so large and respectable a body might constitute a formidable barrier; but the evils of faction have been so great and impendent, and the Russian power and influence so destructive to the very existence of the state, that the deputies seem justly to regard the dictatorial power of the monarch as necessary for their own preservation.

Population. When the great extent of the Swedish territory is considered, the population will appear comparatively small; a circumstance arising in part from the mountainous nature of the country, and in part from the severe climate of the northern districts; Swedish Lapland being supposed not to contain more than 7000 inhabitants. Yet at present the population of the kingdom is thought to exceed 3,000,000. The nobility are so numerous as to be computed at about 2,500 families; while the peasants, the most numerous class, amount to about 2,000,000. This great number of nobility was connected with the aristocratic form of the government, which bore a semblance to that of Poland, and Hungary, the latter kingdom still remaining too aristocratic for the regular distribution of good government through all the classes of the community. The example of Poland will, it is hoped, convince these aristocracies that the transition of their power to the monarch is indispensably necessary for their own preservation.*

[2] Olivarius Le Nord Litteraire, No. 12.

* Olivarus computes the population in the following manner, from the enumeration made in 1784.

Nobility. Individuals from the age of 15 to 63, men 3869, women 2865, children 1904; individuals above and under those ages 8200; domestics 27,263.

Burgesses. Individuals from the age of 15 to 63, men 28,492, women 23,563, children 11,068; individuals above and under those ages 60,500; domestics 31,868.

Clergy. Individuals from the age of 15 to 63, men 5663, women 4120, children 2775; individuals above and under those ages 12,000; domestics 15,980.

Public Officers, including the military. Individuals from the age of 15 to 63, men 23,872, women 18,230, children 8823; individuals above and below those ages 48,700; domestics 41,809.

Peasants. Individuals from the age of 15 to 63, men 320,772, women 296,664, children 257,213; individuals above and below those ages 813,500; domestics 195,388.

Sweden only poſſeſſes one ſmall colony, that in the iſland of St. Bartholomew in the Weſt Indies, which was ceded to them by the French in 1785.[3] Colonies.

The Swediſh army conſiſts of national troops, and of foreign infantry, the latter being computed at about 12,000. The total amount of the army may be 48,000; and the ſoldiers are of diſtinguiſhed valour and hardihood, and elated with the former fame of the Swediſh arms. But on a late invaſion of the Ruſſian dominions they were found to be more obedient to the ariſtocracy, than to their ſovereign. Army.

So fatal were the naval operations of 1792 that the Swediſh fleet, which conſiſted of 30 ſhips of the line, cannot now diſplay above half that number. In the Baltic, which is full of low coaſts and ſhoals, gallies of a flat conſtruction are found more ſerviceable than ſhips of war, and of courſe great attention is paid to their equipment by Sweden as well as Ruſſia. Navy.

The revenue of Sweden is computed at about a million and a half ſterling; which is equalled by the expences of the government. The national debt cannot be much leſs than 10,000,000 ſterling, as it was augmented during the late regency; but the young monarch is anxious for its reduction. This debt being chiefly incurred at Hamburgh, the country is overwhelmed with the paper money of that city; and the ſcarcity of gold and ſilver, and even of copper currency, is incredible. The ducat is the only gold coin, worth about nine ſhillings ſterling; while the ſilver crown may be valued at four ſhillings and ſixpence. The ſchelling, or ſhilling, is worth little more than one penny ſterling; and the copper conſiſts of half and quarter ſhillings, the ancient heavy pieces being now rarely viſible, and ſupplanted by bank-notes, ſome of which are for very diminutive ſums. Revenue.

The political importance and relations of this kingdom are much diminiſhed ſince the glorious reign of Guſtaf Adolph, and the bene- Political Importance and Relations.

[3] Olivarius Le Nord Litteraire, No. 12.

Political Importance, &c.

ficent ſway of Charles XI. Prior to the late revolution in France Sweden had remained a faithful ally of that kingdom, which excited her againſt any enemies in Germany, as Scotland was formerly involved in the wars between France and England. Of late this alliance ſeems to be ſacrificed to a more uſeful connexion with Denmark, and Pruſſia, which can alone guard the north of Europe from the progreſs of the Ruſſian preponderance. The diſorder of the finances unites with many cauſes of diſcontent, both among the ariſtocracy and among the peaſantry, to render the power of Sweden little apparent in the political balance of Europe.

CHAPTER III.

CIVIL GEOGRAPHY.

Manners and Cuſtoms.—Language.—Literature.—Education.—Univerſities.—Cities.—Towns.—Edifices.—Roads.—Inland Navigation.—Manufactures and Commerce.

MANNERS AND CUSTOMS.

THE manners and cuſtoms of the ſuperior claſſes in Sweden are ſo much tinged with thoſe of the French, their allies, that no ſtriking peculiarity can be obſerved; and even the peaſantry have ſo much vivacity and addreſs, that they have been ſtyled the French of the north. The complexion, which in the northern latitudes is generally fair, is here much diverſified, being in ſome provinces extremely brown. The men are commonly robuſt, and well formed; and the women ſlender and elegant. Their attachment to luxury is, in ſome meaſure, compenſated by their love of hoſpitality. The peaſants in general make their own furniture and clothes; trade and manufactures having made very little progreſs. The natives of the weſtern province of Dalecarlia retain many ancient cuſtoms, and have been diſtinguiſhed for their courage and probity, ſince the time that Guſtaf Waſe iſſued from the mines of that country to break the yoke of Denmark. The Finlanders, on the eaſt of the Bothnic gulph, are now little diſtinguiſhable from the Swedes; and any remarkable peculiarities of manners and cuſtoms muſt be ſought in Swediſh Lapland, which has long ſince been deſcribed by Scheffer, whoſe work was tranſlated into Engliſh, and rendered more familiar by an extract in the Spectator.[1] Daniſh Lapland being more remote, leſs known, and more recently deſcribed, an account of this ſingular people is given under the article of Denmark.

[1] See alſo the deſcriptions by Maupertuis, Kalm, Coxe, Conſett, &c.

Language. The language of Sweden is a dialect of the Gothic, being a ſiſter of the Daniſh, Norwegian, and Icelandic. In the two grand diviſions of the Gothic, conſiſting of the German and Scandinavian dialects, the latter is diſtinguiſhed by greater brevity and force of expreſſion. In the ſouth of Sweden, which contains the chief maſs of population, ſome German and French words have been adopted; while the Dalecarlian on the N. W. is eſteemed a peculiar dialect, perhaps only becauſe it contains more of the ancient terms and idiom. The Finniſh gradually yields to the Swediſh; but the rude Laplander retains his old ſpeech, or rather a dialect of the Finniſh adopted by his anceſtors. The Swediſh language is ſufficiently ſonorous, if the pronunciation were more emphatic. The affectation of terminating names in *us*, as if they were Latin, begins gradually to expire after a ridiculous reign of two centuries.

Literature. In the antiquity of literature Sweden cannot pretend to vie with Denmark, Norway, or Iceland: the moſt early native chronicle, or perhaps literary compoſition, being not more ancient than the fourteenth century. In return, while the Danes ſeem occupied with internal policy and public regulation, the Swedes have, in modern times, borne the palm of genius in many departments of literature and philoſophy. One of the moſt remarkable names of Sweden, prior to the reformation, was that of St. Brigit, who flouriſhed in the middle of the fourteenth century, and whoſe pretended prophecies were collected with great care, and publiſhed in Latin. When the biſhops were expelled from the kingdom by Guſtaf Waſe, John and Olaus Magnus retired to Rome, where the one publiſhed a fabulous deſcription of Scandinavia; while the other gave to the world a yet more fabulous hiſtory of his native country. But Swediſh literature can hardly be ſaid to have dawned till the middle of the ſeventeenth century, when the queen Chriſtina, finding the country immerſed in ignorance, invited Grotius, Deſcartes, and other celebrated men, who, though they did not reſide long in the kingdom, yet ſowed the ſeed of letters, which gradually began to proſper in the wiſe and beneficent reign of Charles XI. In the ſucceeding or laſt century the name of Linnæus alone might diſtinguiſh the national literature; and it is joined in natural hiſtory with thoſe of Tilas, Wallerius, Quiſt, Cronſtedt, Bergman,

man, and others. In hiſtory Dalin and Lagerbring have diſtinguiſhed themſelves by a preciſion and force, which the Danes ſeem to ſacrifice to antiquarian diſcuſſions. Sweden alſo boaſts of native poets and orators; and the progreſs of the ſciences is ſupported by the inſtitution of numerous academies. LITERATURE.

The manner of education has, as uſual, been neglected by travellers and geographers, though perhaps one of the moſt important branches in the whole circle of human affairs. Compared with this primary foundation, an enumeration of univerſities is of ſmall conſequence. That of Upſal is the moſt ancient and renowned, containing about 500 ſtudents; while that of Lunden preſents about 300. A third is at Abo in Finland, frequented even by ſtudents from Ruſſia; and the whole number is computed as equalling that of Upſal. There are beſides twelve literary academies, moſt of which publiſh memoirs of their tranſactions. The library at Upſal is richly furniſhed with books remitted by Guſtaf Adolph, when his victorious arms penetrated deeply into Germany, Sweden having thus acquired by war the firſt materials of her literary fame. Education. Univerſities.

Stockholm, the capital of Sweden, ſtands in a ſingular ſituation between a creek, or inlet, of the Baltic ſea, and the lake Mæler. It occupies ſeven ſmall rocky iſlands, and the ſcenery is truly ſingular and romantic. "A variety of contraſted and enchanting views is formed by numberleſs rocks of granite, riſing boldly from the ſurface of the water, partly bare and craggy, partly dotted with houſes or feathered with wood."[2] Somewhat reſembling Venice, but with greater diverſity of proſpect, it requires no fortifications. Moſt of the houſes are of ſtone or brick, covered with white ſtucco; except in the ſuburbs, where ſeveral are of wood painted red, as uſual in the country of Sweden. This city was founded by the earl Birger, regent of the kingdom, about the middle of the thirteenth century; and in the ſeventeenth century the royal reſidence was transferred hither from Upſal. The entrance to the harbour is through a narrow ſtreight, of ſomewhat difficult acceſs, eſpecially as there are no tides: and for Cities and Towns. Stockholm.

[2] Coxe. iv. 33. See alſo Marſhall, ii. 330.

four

Cities and Towns.

four months in the year it is frozen. It is however deep, and capable of receiving a great number of veſſels. The royal palace ſtands in a central and high ſituation; and there are a caſtle, an arſenal, and ſeveral academies. The manufactures are few, of glaſs, china, woollen, ſilk, linen, &c. By the lateſt accounts the population of Stockholm may be eſtimated at 80,000.

Upſal.

Next in dignity is Upſal, the only archbiſhoprick, and formerly eſteemed the chief city of the kingdom; but at preſent the inhabitants, excluſive of the ſtudents, do not exceed 3000.[3]

Gothenberg.

Gotheborg, or Gothenburg, in the province of Weſt Gothland, is eſteemed the ſecond city in Sweden, having a population of 20,000, though it was only founded by Charles IX, or rather by Guſtaf Adolph. Beſides conſiderable commerce, the herring fiſhery contributes to enrich Gothenburg.[4] The ſtreets are uniform; and the circumference is computed at near three miles: but the fortifications are ſo weak that in 1788 it muſt have fallen into the hands of the Danes, had it not been for the interference of foreign powers.

Carlſkrona.

Carlſkrona was founded by Charles XI in 1680. This city, and Stralſund, in Swediſh Pomerania, are ſuppoſed each to contain about 11,000 inhabitants. Abo, in Finland is computed at 8,750; in which number it is nearly rivalled by Nordkioping. Fahlun is the next in population; and is followed by Wiſmar, another town poſſeſſed by Sweden, on the northern ſhore of Germany. None of the other towns contain more than 4,000 inhabitants.

Edifices.

Even including the royal palaces, Sweden cannot boaſt of many ſplendid edifices. The roads are in general far ſuperior to thoſe of Denmark and Norway, which ſeem unaccountably neglected, good roads being the very ſtamina of national improvement. Yet the internal communication, even in Sweden, is impeded by bad arrangements.[5]

Inland Navigation.

Of late a laudable attention has been paid to inland navigation; and the chief effort has been to form a canal between Stockholm and

[3] Coxe, iv. 175. [4] Ib. iv. 323. [5] Olivarius Le Nord. Lit. No. 12.

Gothenburg.

Gothenburg. In this canal, ſtyled that of Trolhattan, conducted along the river Gotha, ſtupendous excavations have been made through the granitic rocks, in order to avoid cataracts; one of which, of more than 60 feet, is called the Infernal Fall. Yet the plans have repeatedly failed, from the ignorance of the engineers; and the firſt expence ought to have been to procure a ſuperintendant of real ſkill from England. The intention was to conduct an inland route from the Meler lake to that of Hielmer, and thence to that of Wener; and by the river Gotha, an outlet of the latter, to the Skagger Rack and German ſea. This grand deſign is already in ſome meaſure completed; and in the year 1800 the rivers and old canals of Finland were ordered to be cleared; but in that region the ice affords the eaſieſt mode of communication. Inland Navigation.

The Swediſh manufactures are far from being numerous, conſiſting chiefly of thoſe of iron and ſteel; with cloths, hats, watches, and ſail cloth. The manufactures of copper and braſs, and the conſtruction of ſhips, alſo occupy many hands. In 1785 it was computed that 14,000 were employed in thoſe of wool, ſilk, and cotton. Of native products exported, iron is the moſt conſiderable; and it is ſaid that the miners in the kingdom are about 25,600. Manufactures, and Commerce.

The commerce of Sweden reſts chiefly on the export of their native products, iron, timber, pitch, tar, hemp, and copper. Herrings alſo form a conſiderable article. Part is alſo transferred to other nations of the goods imported by Swediſh merchants, from the iſle of St. Bartholomew in the W. Indies, and from China. The chief import is corn of various kinds, particularly rye, Sweden rarely affording a ſufficiency for her own conſumption; with hemp, tobacco, ſugar, coffee, drugs, ſilk, wines, &c. Mr. Coxe has publiſhed a table of the Swediſh commerce, whence it appears that the exports then amounted to 1,368,830l. 13s. 5d., and the imports to 1,008,392l. 12s. 4½d., ſo that the balance in favour of Sweden was about 360,000l.

CHAPTER IV.

Natural Geography.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

Climate and Seasons.

THE different parts of Sweden preſent conſiderable varieties of temperature, but even in the middle regions winter maintains a long and dreary ſway. The gulph of Bothnia becomes one field of ice; and travellers paſs on it from Finland by the iſles of Aland. In the moſt ſouthern provinces, where the grand maſs of the population is centered, the climate may be compared to that of Scotland, which lies under the ſame parallel; but the weſtern gales from the Atlantic, which deluge the Scotiſh Highlands with perpetual rain, and form the chief obſtacle to improvement, are little felt. In the north the ſummer is hot, by the reflexion of the numerous mountains, and the extreme length of the days; for at Tornea, in Swediſh Lapland, the ſun is for ſome weeks viſible at midnight; and the winter in return preſents many weeks of complete darkneſs. Yet theſe long nights are ſomewhat relieved, by the light of the moon, by the reflexion of the ſnow, and by the Aurora Borealis, or northern lights, which dart their ruddy rays through the ſky, with an almoſt conſtant effulgence. Of late years it has been remarked that the ſpring is more cold than formerly; yet at Stockholm the tulips blow at Whitſunday. Beyond Geffle fruit trees are rare. In a further latitude the beech diſappears; and the oak dwindles, till it is followed by the birch, a tree which ſeems the moſt capable of bearing cold.

No

No country can be diverſified in a more picturesque manner, with extenſive lakes, large tranſparent rivers, winding ſtreams, wild cataracts, gloomy foreſts, verdant vales, ſtupendous rocks, and cultivated fields. The ſoil is not the moſt propitious; but agriculture is conducted with ſkill and induſtry, ſo as much to exceed that of Germany, and Denmark.[1] Even Finland preſents many rich paſtures, and not a few fields of rye, oats, and barley. It is ſuppoſed that in the ſouth of Sweden by draining and other improvements, a ſufficient quantity of wheat might be raiſed for the ſupply of the kingdom.

Face of the Country.

Soil and Agriculture.

Sweden is interſected by numerous rivers, the largeſt of which are in the native language called Elbs, or Elfs. The moſt conſiderable flow from the lakes, without any great length of courſe; ſuch as the Gotha, the only outlet of the vaſt lake of Wener, but unhappily impeded by many rocks and cataracts. Many other rivers in the ſouth rather aſſume the form of creeks, and outlets of the lakes, as the Motala, which is the outlet of the lake Weter paſſing by Norkioping: and ſcarcely can a ſtream be named of conſiderable courſe, till we reach the river Dahl, the moſt important in Sweden, conſiſting of two conjunct ſtreams, the eaſtern and weſtern Dahl, which riſe in the Norwegian Alps, give name to the province of Dalarn, or Dalecarlia; and after a courſe of about 260 Britiſh miles enter the Bothnic gulph, about 10 miles to the eaſt of Geffle, preſenting, not far from its mouth, a celebrated cataract, eſteemed little inferior to that of the Rhine at Schaffhauſen, the breadth of the river being near a quarter of a mile, and the perpendicular height of the fall between 30 and 40 feet.[2] The ſurrounding ſcenery alſo aſſiſts the effect, which is truly ſublime.

Rivers.

Dahl.

Further to the north, and in Swediſh Lapland, are many conſiderable rivers, which alſo riſe from the Norwegian Alps, and flow into the gulph of Bothnia, after circuits of about 200 miles. The chief of the Laplandic ſtreams is the Tornea, which ſprings from a lake of the ſame name; and after receiving the Kengis, and other conſiderable rivers, joins the northern extremity of the Bothnic, having run about 300 Britiſh miles.

Tornea.

[1] Marſhall, iii. 93.

[2] Wraxall's Northern Tour, p. 158. Coxe, v. 99.

Rivers. Finland is ſprinkled with numerous lakes, which give riſe to conſiderable ſtreams, but of a ſhort courſe, as the Ulea; the Cano which paſſes by Biormborg; and the Kymmen flowing into the centre of the gulph of Finland.

Lakes. Few countries can rival Sweden in the extent and number of lakes, which appear in almoſt every province. Of theſe the moſt important
Wener. is the Wener, which is about 100 Britiſh miles in length, by 50 or 60 in breadth, in great part ſurrounded with foreſts, and rocks of red granite. It receives 24 rivers, abounds with fiſh, and contains many romantic iſles.

Weter. Next is the Weter, a lake of equal length but inferior in breadth, which ſeldom exceeds 20 miles. This lake being ſurrounded with mountains is particularly ſubject to ſtorms in the ſtilleſt weather, whence ariſe many popular tales and ſuperſtitions: it contains two remarkable iſlands; and on the ſhores are found agates, carnelians, and touch-ſtones, or pieces of fine baſaltes.[3] The Weter is clear though deep; and while it receives about 40 ſmall rivers, has no outlet except the Motala. On its eaſtern ſhore ſtands the little town of Wadſtena, remarkable for a convent in which was preſerved the body of the Swediſh Brigit.*

Meler. The lake Meler, at the conflux of which with the Baltic is founded the city of Stockholm, is about ſixty Britiſh miles in length, by eighteen in breadth, and is ſprinkled with picturesque iſles. To the S. W. is the lake of Hielmar, more remarkable for its propoſed utility in the inland navigation, than for its extent.

Many other lakes are found in the north of Sweden, among which the moſt conſiderable is that of Stor, in the province of Jemtia. The chief lake of Lapland is that of Enara, in the furtheſt north, about ſeventy Britiſh miles in length, by thirty at its greateſt breadth. After this may be named thoſe of Hernaſba Staer, or the great lake, Tornea, and others. The lake and mountain of Niemi, and the river Tengilo, which falls into the Tornea, have been celebrated by Maupertuis for their picturesque beauty.

[3] Buſching i. 549.

* The curious diary of this convent, which conſiſted of monks and nuns, was publiſhed by the learned Benzelius at Upſal, 1721. 4to.

The moſt conſiderable lake in Finland is that of Pejend, or Pajana, about 80 miles in length, by 15 in breadth, and which gives ſource to the river Kymmen. The lake of Saima to the E. is yet more conſiderable; but it is chiefly within the Ruſſian dominions: this lake may perhaps, with its various creeks and communications, be eſtimated at 160 Britiſh miles in length, by 25 at its greateſt breadth; and flows into the Ladoga, by the great and noiſy current of Woxen, which forms a vaſt cataract about a mile from its mouth.[4] Lakes. Saima

Sweden may be in general regarded as a mountainous country; in which reſpect it is ſtrongly contraſted with Denmark proper, or Jutland and the iſles. The chief mountains are in that elevated chain which divides Sweden and Swediſh Lapland from Norway; from which ſucceſſive branches run in a S. E. direction. The mountain of Swucku is ſuppoſed to be one of the higheſt of this chain, and is of a compact flaty freeſtone; but on the weſt there are maſſes of a different nature; and where it inclines to the lake of Fæmund, there are apertures from two to four fathom in width, and of an equal depth, but extending in length from two to three hundred ells.[5] That able author mentions the high mountain of Moſſevola, near the ſame lake, as being formed of a pudding-ſtone, conſiſting of balls of free-ſtone, with a few of hornblende and limeſtone, united by a ſandy cement.[6] The mountain of Rættvik he ſays is calcareous, and he eſtimates its height at 6000 feet above the ſea, obſerving, as a ſingularity, that upon this mountain and that of Rodaberg, are found vaſt blocks of reddiſh felſpar, mingled with quartz and brown mica. There alſo occur, on the mountain of Oſmund, enormous fragments of tranſparent felſpar, mingled with quartz and mica; though we muſt proceed to the high mountains of Norway to find ſummits more elevated than this laſt. Orology, or an exact account of mountains, was little ſtudied when Bergman publiſhed this work about 1770; but it would appear that the granitic ridge of the chain is in Norway; while the flanks, conſiſting as uſual of limeſtone, pudding-ſtone, and free-ſtone, verge Mountains. Swucku. Moſſevola. Rættvik.

[4] Buſching, i. 674.

[5] Bergman's Phy. Geog. in the Journal des Mines, xv. xv.: in the French tranſlation Bergman computes the height of Swucku at 2,268 ells, that is about 9072 feet. Ib. p. 65.

[6] Ib. p. 64.

into

Mountains

into Sweden. The centre of the chain ſeems, as in the Alps and Pyrenees, to preſent the chief elevations, whence the mountains decline in height towards Lapland. Thoſe of Finland often contain rapakivi, being a brown mixture of felſpar and mica.[7] In the centre and ſouth of Sweden the red granite becomes very common. But in Weſtrogothia the mountains are often of trap.

Further illuſtrations of the grand chain of mountains, which divide Sweden from Norway, will be found in the deſcription of the Daniſh dominions; and in conſidering the Swediſh mineralogy other hints will ariſe concerning the geology of the country.

Foreſts.

The foreſts of this kingdom are numerous, and without their aid the mines could not be wrought. Dalecarlia, in particular, abounds with foreſts of birch, poplar, mountain aſh, pine, and fir; and the numerous lakes of Sweden are generally ſkirted with wood to the margin of the water.

Botany.

Although the great Scandinavian peninſula be divided by its political intereſts between Denmark, Sweden, and Ruſſia, yet nature refuſes to acknowledge any ſuch diſtinction; ſhall therefore be conſidered with reſpect to its botany as one great whole, nor can a ſketch of its indigenous plants be introduced anywhere with more propriety than in the deſcription of that territorial part of it which, in extent, is ſuperior to all the reſt, and which reckons amongſt its citizens the illuſtrious Linnæus, and ſeveral of his moſt eminent diſciples.

The lowlands and lakes of Scandinavia are principally ſituated in the ſouth of Sweden and Finland, and the great ranges of Alpine mountains are found near the Arctic circle, or at leaſt are confined to the northern provinces; hence it is that Lapland, both from its elevation and its northern ſite, contains ſeveral plants which are not to be met with in the reſt of the peninſula.

Several ſpecies are common both to England and Scandinavia, and though the flora of Britain be the moſt copious of the two, yet the ſuperiority is not perhaps ſo great as might be expected from the difference of climate. If thoſe ſpecies that are natives of our chalk hills, and ſouthern coaſts, are for the moſt part wanting to Scandinavia, yet this

[7] Ib. 72. Kirwan, i. 345.

laſt

laſt contains ſeveral German and Arctic plants which are not to be found in our own iſland. BOTANY.

Of timber trees there are but few ſpecies; the moſt common, and thoſe which conſtitute the wealth of Scandinavia, are the Norway pine, and the fir: of theſe there are immenſe foreſts ſpread over the rocky mountains, and deepening with their ſullen hue the whole horizon; thouſands of giant growth are every winter overthrown by the ſtorms, and allowed to periſh where they fall from the impoſſibility of tranſporting them to the ſea, others, in more acceſſible ſituations, are converted to various human uſes; the wood from its lightneſs and ſtraightneſs is excellent for maſts and yards, and various domeſtic purpoſes; the juice, as tar, turpentine, and pitch, is almoſt of equal value with the wood; and the inner bark, mixed with rye-meal, furniſhes a coarſe bread in times of ſcarcity. The *bird cherry*, prunus padus; the *white beam*, cratægus aria; the *mountain aſh*, ſorbus aucuparia; the *alder*, the *birch*, and *dwarf birch*, betula alnus, b. alba, b. nana; ſeveral kinds of *willow*; the *aſpen*, populus tremula; are found in the whole peninſula; the lime, the elm, the aſh, and the oak, though growing with freedom in the ſouthern parts, are incapable of withſtanding the rigours of a Lapland winter. Among the larger ſhrubs the *German tamariſk*, tamarix Germanica; the *guelder roſe*, viburnum opulus; and the *barberry*, berberis vulgaris, are met with chiefly in the ſouth; the *burnet roſe*, the *gale*, the *raſpberry*, and *juniper*, are hardy enough to flouriſh even within the Arctic circle. The lower woods and thickets afford the Linnæa borealis, and Trientalis Europæa, in great abundance, and here and there are found the *everlaſting pea*, lathyrus ſylveſtris; the *narrow-leaved willow herb*, epilobium anguſtifolium; the *mezereon*, Daphne mezereum; the *hepatica*, anemone hepatica; and the cornus Suecica. The fir woods yield two ſpecies of pyrola, the rotundifolia, and minor; and the ſhady ſides of mountains and alpine lakes are adorned by the ceraſtium alpinum, ſerratula alpina, ſedum rupeſtre, tuſſilago frigida, lycopodium complanatum, ranunculus aconitifolius, aconitum lycoctonum, trollius Europæus, *globe flower*, and the ſplendid pedicularis ſceptrum.

The

Botany. The dry rough tracts on the ſides of the mountains are covered with the *common* and *fine-leaved heath*, erica vulgaris and tetralix; the *bear-berry*, arbutus uva-urſi, diſtinguiſhed by its ſcarlet cluſters; the *Iceland* and *rein-deer lichen*, the one an article of food to the inhabitants, the other the chief ſupport of the animal whoſe name it bears; dryas octopetala, *mountain avens*, vaccinium vitis-idæa, rubus ſaxatilis, rhodiola roſea, and ſaxifraga cotyledon, *pyramidal ſaxifrage*. The bleak ſummits where even the heath cannot root itſelf are clothed with the beautiful azalea procumbens, androſace ſeptentrionalis, andromeda hypnoides, and ranunculus glacialis; with the arbutus alpina, lycopodium alpinum, and ſaxifraga nivalis. The mountain paſtures conſiſt for the moſt part of the phleum alpinum and other viviparous graſſes, mixed with phaca alpina, aſtragalus alpinus, arnica montana, gentiana purpurea, alchemilla alpina, viola biflora, gentiana nivalis, veronica alpina, and polygonum viviparum.

The moiſt ſpungy alpine rocks, and the ſides of the torrents afford the *cloudberry*, rubus chamæmorus, one of the moſt plentiful and grateful of the Scandinavian fruits; thalictrum alpinum; ſeveral kinds of ſaxifrage, eſpecially the cernua and aizoides; juncus trifidus, ſalix herbacea and reticulata, and anthericum calyculatum. The wet and boggy paſtures yield, for the moſt part, a coarſe graſs mixed with *cotton ruſh*, eriophorum, with narthecium oſſifragum, pedicularis flammea, andromeda polyfolia, vaccinium oxycoccos, *cranberry*, the fruit of which grows to a larger ſize than that of the ſame ſpecies in the Engliſh moſſes, ſaxifraga hirculus, vaccinium uliginoſum, and gentiana pneumonanthe.

The plants which grow in the lakes and pools, covered as they are with ice nearly half the year, are not very numerous; the moſt important are the *white* and *yellow water-lily*, nymphæa alba and lutea; calla paluſtris, littorella lacuſtris, lobelia dortmanna, menyanthes trifoliata, and nymphoides, *buck-bean*, and *fringed water-lily*.

The plants of Lapland may be divided into thoſe which are common to this and to more ſouthern countries, and thoſe which are ſcarcely ever met with beyond the limits of the Arctic circle. Among the former may be particularized azalea procumbens, ſaxifraga cernua, and rhodiola roſea,

roſea, all growing in immenſe abundance on the higheſt mountains; ribes rubrum, *red currant*, vaccinium myrtillus, *whortleberry*, rubus chamæmorus, *cloudberry*, rubus ſaxatilis, *ſtone bramble*, the berries of all which are gathered in great quantities and preſerved under the ſnow till winter, at which time, mixed with rein deer's milk, they form an agreeable variety in the food of the inhabitants: the moiſt woods are perfumed during the ſhort ſummer by the *lily of the valley*, convallaria maijalis, and ledum paluſtre. Botany.

The vegetables peculiar to Lapland, and which grow either on the higheſt mountains or on the ſhore of the northern ocean, are diapenſia lapponica, andromeda cærulea and tetragona, rubus arcticus, ranunculus lapponicus and hyperboreus, pedicularis lapponica, gnaphalium alpinum, ſalix lapponum, orchis hyperborea, pinguicula alpina, and azalea lapponica.

The Swediſh horſes are commonly ſmall but ſpirited; and are preſerved, by lying without litter, from ſome of the numerous diſeaſes to which this noble animal is ſubject. The cattle and ſheep do not ſeem to preſent any thing remarkable. Among the wild animals may be named the bear, the lynx, the wolf, the beaver, the otter, the glutton, the flying ſquirrel, &c. The rein deer of Lapland is briefly deſcribed in the account of the Daniſh monarchy. Sweden alſo preſents one or two ſingular kinds of falcons, and an infinite variety of game; among which may be named the kader, or chader, in Scotland called the cock of the foreſt, being as large as a common turkey, and of a black colour, while the hen is orange and far inferior in ſize. The ora is rather larger than our black game. The hierpe is eſteemed the moſt delicate, about the ſize of a young pigeon, diverſified with black, grey, and white. The ſnoripa makes an extraordinary noiſe, particularly in the night.[9] The rana bombina, and the coluber cherſea, are conſidered as almoſt peculiar to Sweden. Zoology.

Of modern mineralogy Sweden may perhaps be pronounced the parent country; and her authors, Wallerius, Cronſtedt, and Bergman, (not to mention the great Linnæus, who confeſſes that he had no pre- Mineralogy.

[9] Conſett, p. 71, &c.

Mineralogy. dilection for this ſtudy, perhaps becauſe it was undeterminable by forms and members, upon which his zoology and botany reſt,) have laid the firſt ſolid foundations of the ſcience. It would therefore be a kind of literary ingratitude not to beſtow due attention on Swediſh

Gold. mineralogy. Firſt in dignity, though not in profit, are the gold mines of Adelfors in the province of Smoland. The rock is chiefly a ſlaty hornblende, in vertical banks, black, deep brown, red, or greeniſh, ſometimes ſoft like lapis ollaris, ſometimes very hard. The veins are generally of quartz, of a dark colour; the direction of the moſt productive being from N. to S. varying in thickneſs from two inches to near a fathom.[10] The gold is ſometimes native; and ſometimes combined with ſulphur. Some ores of copper are alſo found in the vein, which likewiſe preſents white calcareous ſpar, red zeolites, ſmall red or green fragments of petroſilex, with galena and iron. But theſe mines

Silver. ſeem to be nearly exhauſted.* In the production of ſilver Sweden yields greatly to Norway; yet the mine of Sala, or Salberg, about 30 Britiſh miles weſt of Upſal, maintains ſome reputation. It is ſituated in a country rather flat; and towards Norberg the region of the mines is divided, from a maſs of petroſilex, by fiſſures filled with earth, and little fragments of ſteatite. The ſilver is in limeſtone; which, however, when it is large grained and free from mixture, contains no mineral, and is ſtyled ignoble rock: it is on the contrary metalliferous when fine grained, and mingled with mica.[11] There are about 100 veins, greater or ſmaller; and the gangart† is of ſteatite, talc, amianthus, aſbeſtos, hornblende, calcareous ſpar, and ſometimes quartz and beautiful petroſilex. The ſilver is rarely found native, but is procured from the galena or lead ore. Silver has alſo been found in Swediſh Lapland.

Copper. The chief copper mines of Sweden are in the province of Dalecarlia. On the eaſt of the town of Falun is a great copper mine, ſuppoſed to

[10] Bergman Phy. Geog. ut ſupra, p. 49.

* Gold is alſo found in hornblende, at Baſna near Ryddarhytte. Ib. 24.

[11] Bergman Phy. Geog. ut ſupra, p. 53.

† This word, adopted from the German, ſignifies what was formerly ſtyled the matrix, a term abandoned, becauſe it implied that the mineral was produced by the ſubſtance in which it was found.

have been worked for near 1000 years.[12] The metal is not found in veins, but in large maſſes; and the mouth of the mine preſents an immenſe chaſm, nearly three quarters of an Engliſh mile in circumference, the perpendicular depth being about 1020 feet. About 1200 miners are employed. Copper is alſo wrought in Jemtland; and at Ryddarhytte is found in iron. Nor is Sweden deficient in lead: but iron forms the principal product, and the mine of Danamora is particularly celebrated for the ſuperiority of the metal, which in England is called Oregrund iron, becauſe it is exported from Oregrund an adjacent port, where the Bothnic gulph joins the Baltic. The mines of Danamora have no galleries, but are worked in the open air by means of deep excavations.[13] The ore is in a limeſtone rock, and occupies about 300 perſons in twelve pits. This valuable mine was diſcovered in 1488. Bergman deſcribes the iron mine of Taberg, in Smoland, as conſiſting of beds of ore, of a blackiſh brown, ſeparated by beds of mould without any ſtone.[14] This enormous mineral pile is rivalled by an entire mountain of iron ore near Tornea, in Lapland; and at Luleo the mountain of Gellivar forms a maſs of rich iron ore, of a blackiſh blue, extending, like an irregular vein, for more than a mile, and in thickneſs from 300 to 400 fathom.* Cobalt is found at Baſna, and zinc at Danamora; while the mines of Sala preſent native antimony; and molybdena appears at Norberg. Coal has been recently diſcovered in the province of Scone.

MINERALOGY.

Iron.

Sweden abounds with beautiful granite; but in marble yields to Norway. Porphyry alſo appears in the mountain of Swucku, and many other parts. At preſent, when precious ſtones are radically diſtinguiſhed from coloured cryſtals, it would perhaps be difficult to diſcover any of the former in Sweden. Bergman celebrates the rock cryſtals of Offerdals in Jemtland, found in cavities of white quartz, which runs in veins through a rock of lapis ollaris;[15] but he paſſes in ſilence any other Swediſh production of this kind, nor does the in-

[12] Coxe, v. 94. [13] Ibid. v. 103. [14] Ut ſupra, p. 58.

* In another paſſage, p. 23, Bergman obſerves that the two mountains of Kerunawara, and Louſowara, in Pitea Lapland, only divided by a little valley, are wholly compoſed of iron ore.

[15] Journal des Mines, ib. 35.

Mineralogy. duſtrious Wallerius ſupply this defect, and he only adds coarſe garnets of various colours.

Mineral Waters. The moſt renowned mineral waters in Sweden are thoſe of Medewi in eaſtern Gothland.

Natural Curioſities. Sweden and Swediſh Lapland, abound with natural curioſities, of various deſcriptions. Some of the lakes and cataracts have been already mentioned; and it would be vain to attempt to deſcribe the many ſingular and ſublime ſcenes, which occur in ſo variegated and extenſive a country.

SWEDISH ISLANDS.

Swedish Isles. Sewden poſſeſſes many iſlands, ſcattered in the Baltic ſea and gulph of Bothnia.

Rugen. Rugen, the moſt ſoutherly, affords as it were a paſſage to the Swediſh poſſeſſions in Pomerania. This iſle formerly had its own princes, who afterwards paid homage to the Danes. It was annexed to Sweden by the treaty of Weſtphalia, and is not a little productive in grain and cattle. Next on the N. E. is the iſle of Bornholm, an ancient appanage of Denmark yielded to Sweden in 1658, but ſoon after reſtored to Denmark by the wiſh of the inhabitants, though it be often erroneouſly deſcribed in the maps as belonging to Sweden.

Œland. Further to the north is the long iſland of Oland, or Œland, in length about ſeventy miles, in breadth about ſix. In the north are many fine foreſts, while the ſouthern part is more level and fertile. The horſes are ſmall but ſtrong, and the foreſts abound with deer, nor is the wild boar unknown. Freeſtone, alum, and touchſtone are products of Œland; and the inhabitants are computed at near 8000.

Gothland. Next occurs the iſland of Gothland, known to the literary world by the travels of Linnæus, about ſeventy miles in length, and twenty-four in breadth; a fertile diſtrict remarkable for an excellent breed of ſheep.

Swedish Isles.

It was ſubject to the Danes for near two centuries, till 1645, when it was reſtored to Sweden. The iſles of Aland mark the entrance of the Bothnic gulph, deriving their name from the largeſt, which is about forty miles in length, and fifteen in breadth, containing about 9000 inhabitants, who ſpeak the Swediſh language, though included in the government of Finland. Theſe iſles form as it were a barrier of rocks of red granite, ſtretching to the oppoſite ſhores.

PORTUGAL.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

Names. THE name of Portugal is of recent origin. In the Roman period there was a town called *Calle*, now Oporto, near the mouth of the river Douro, and this haven being eminently diſtinguiſhed, the barbariſm of the middle ages conferred on the circumjacent region the name *Porto Calle*; which, as the country was gradually recovered from the Moors, was yet more improperly extended to the whole kingdom.[1] The ancient name of this country was Luſitania; but the boundaries do not exactly correſpond.

Extent. Portugal extends about 360 Britiſh miles in length, by 120 in breadth; and is ſuppoſed to contain about 27,280 ſquare miles, which with a population of 1,838,879, will yield 67 inhabitants to the mile ſquare.[2] The extent and population thus approach nearly to thoſe of Scotland: but by ſome accounts the population of Portugal may exceed the calculation here followed by nearly half a million.

[1] D'Anville Etats formés en Europe, &c. p. 192.

[2] Boetticher's Tables, p. 46.

The

The original population of Portugal may be traced in that of Spain, and has undergone the ſame revolutions. Thoſe who are deſirous to enquire further into the ſubject may conſult the learned work of the Portugueſe antiquary.[3] ORIGINAL POPULATION.

The progreſſive geography of Portugal is alſo included in that of Spain, till the eleventh century, when it began to form a ſeparate ſtate. The kings of Caſtille had recovered a ſmall part of this country from the Moors about the year 1050: and the conqueſt was gradually extended from the north till about the middle of the thirteenth century, when the acquiſition of Algarve compleated the preſent boundaries of Portugal. PROGRESSIVE GEOGRAPHY.

The hiſtorical epochs of ſo recent a ſtate cannot be numerous; nor is it neceſſary to recur to thoſe ancient events, which more properly belong to the general hiſtory of Spain. HISTORICAL EPOCHS.

1. The kings of Aſturias ſubdue ſome of the Mooriſh chiefs of the north of Portugal; and Alphonſo the great eſtabliſhes epiſcopal ſees in the part between the Minho and Douro. In 1054 Ferdinand king of Caſtille extends his conqueſt to Coimbra; and on ſharing his dominions among his ſons, Don Garcia, along with Galicia, had a part of Portugal, whence he is ſtyled on his tomb, A. D. 1090, *Rex Portugalliæ et Galleciæ*.[4]

2. Alphonſo VI, brother of Garcia, and king of Caſtille, having favourably admitted ſeveral French princes to his court, among them was Henry, whom he nominated count of Portugal, adding his natural daughter Thereſa in marriage. The moſt exact French writers aſſert, from the chronicle of Fleuri, that this Henry was the grandſon of Robert duke of Burgundy, ſon of Robert king of France; and deſerve more credit than the Spaniſh, who derive him from the houſe of Lorrain, through a relation of Godfrey of Boulogne, the hero of Jeruſalem; a manifeſt error, as Godfrey of Boulogne, though he held the duchy of Lorrain, was not of the houſe of Lorrain. However this be, Henry appears as Count of Portugal in 1094 or 1095: ſignalized himſelf by many victories over the Moors, and died in 1112, leaving

[3] Reſcudii Antiquitates Luſitaniæ. Col. Agrip. 1600, 12mo.

[4] D'Anville, 194.

a ſon

Historical Epochs.

a ſon Alphonſo the firſt. In the year 1139 Alphonſo gains an illuſtrious victory over five Mooriſh princes, and is acclaimed king by his troops upon the field of battle. In 1148 he ſeizes Liſbon by the aſſiſtance of a fleet of Cruzaders going to the Holy Land. Alphonſo died in the year 1185, aged upwards of ninety. Such are the foundations of the Portugueſe monarchy.

3. Alphonſo III, about the year 1254, completes the conqueſt of Algarve. Portugal continued to be fortunate in a ſucceſſion of great princes; but the wars againſt the Moors were unhappily followed by thoſe againſt the kings of Caſtille, which have implanted ſuch a deep hatred between the nations.

4. Portugal was to attract the admiration of Europe by her commercial diſcoveries. In 1415 John the great, king of Portugal, carrying his arms into Africa, and taking the city of Ceuta, an impulſe was given to the national ſpirit; and in 1420 we find the Portugueſe in poſſeſſion of Madeira. Emulation alſo contributed, for in 1402 Jean de Bethencourt, chamberlain of Charles VI of France, had taken poſſeſſion of the Canaries, and afterwards aſſumed the title of king of thoſe iſlands.[5] The Portugueſe diſcoveries in Africa proceeded under John's ſucceſſors, Edward, and Alphonſo V, and the auſpices of Prince Henry, till, in the reign of John II, they extended to the cape of Good Hope: and in that of Emanuel, Vaſco de Gama opened the Eaſt Indies.

5. John III admits the inquiſition, A. D. 1526; ſince which event the Portugueſe monarchy has rapidly declined.

6. Sebaſtian king of Portugal leads a powerful army on an idle expedition into Africa, and is ſlain in battle. He is ſucceeded by his uncle Cardinal Henry; who dying two years afterwards, Portugal was ſeized by Philip II king of Spain, 1580.

7. The revolution of 1640, which placed the houſe of Braganza on the throne of Portugal. John IV was a deſcendant of the ancient royal family, by the female line. Little of conſequence has ſince ariſen, except the earthquake at Liſbon in 1755, and the recent intermarriages with Spain, which promiſe, at no remote period, to unite the

5 See the hiſtory written at the time by his Chaplains, publiſhed at Paris 1630, 8vo.

kingdoms.

kingdoms. The recent peace with Spain ſeems to have been procured by humiliating conceſſions. Historical Epochs.

The antiquities of Portugal conſiſt chiefly of Roman monuments, with a few Mooriſh remains. In the furtheſt north is an extenſive ſeries of arches, formerly a Roman aqueduct.[6] At Evora are well preſerved ruins of a temple of Diana, and an aqueduct aſcribed to the celebrated Quintus Sertorius, whoſe life is delineated by Plutarch.* Among the antiquities of the middle ages may be named the noble monaſtery of Batalha, in Portugueſe Eſtremadura, about 60 miles to the north of Liſbon, founded by John I, at the cloſe of the fourteenth century, in conſequence of the great victory over the king of Caſtille, one of the moſt noble monuments of what is called the Gothic ſtyle of architecture.[7] Antiquities.

[6] Murphy's Travels.

* At Chaves is a Roman bridge, erected in the time of Trajan and ſtill entire.

[7] See the minute deſcription by Murphy.

CHAPTER II.

Political Geography.

Religion.—Eccleſiaſtical Geography.—Government.—Laws.—Population.—Colonies.—Army.—Navy.—Revenues.—Political Importance and Relations.

Religion. THE religion of Portugal is the Roman Catholic; and a ſtrict obſervance of its duties forms one of the national characteriſtics, the men vying with the women in attention to their repeated daily devotions. There are two archbiſhopricks, and ten epiſcopal ſees: and there is beſides a patriarch, but he does not ſeem to poſſeſs extraordinary powers. The number of pariſhes approaches four thouſand;[1] while in Scotland, a country of ſimilar extent, they do not reach one thouſand: but the catholic religion affords ſupplies for a far greater number of prieſts, than the proteſtant.

Government. The conſtitution of Portugal is a monarchy, abſolute and hereditary; yet in caſe of the king's demiſe without male iſſue, he is ſucceeded by his next brother, whoſe ſons have however no right to the throne till

Laws. confirmed by the ſtates.[2] The chief articles of the conſtitution are contained in the ſtatutes of Lamego, iſſued by Alphonſo I in 1145. The king's titles are numerous: that of the heir apparent is prince of Braſil; his eldeſt ſon prince of Beira. The laws have few particularities: they are lenient in caſes of theft, which muſt be repeated four times before death be the puniſhment. An adultereſs is condemned to the flames: but this, like other laws too ſevere for the offence, is never put in execution.

Population. Portugal is divided into ſix provinces. 1. Entre Douro e Minho. 2. Tras-os-Montes. 3. Beira. 4. Eſtremadura. 5. Alentejo. 6. Algarve. The two firſt being on the north of the kingdom, the next two

[1] Murphy's State of Portugal, p. 10.

[2] Ib. 109, from the Portugueſe writers.

in

in the middle, the two laſt in the ſouth. The firſt province derives its name from its ſituation, between the rivers Douro and Minho, and is very populous and fertile. The ſecond is mountainous, as the name imports; but there are vales which contain vineyards, and other cultivated lands. Beira is a large and fertile province; and is rivalled in ſoil by Eſtremadura, which, like the Spaniſh province of the ſame name, is ſaid to derive its etymon from having been extreme frontiers towards the Moors in the ſouth. Alentejo having been moſt expoſed to the attacks of the Spaniards, is defective in population. Algarve is a very ſmall diviſion, which has however the honour of forming an addition to the royal titles, as Navarre to that of France; thoſe minute provinces having been comparatively recent acquiſitions. The population of the whole is, according to Boetticher, 1,838,879; but by Murphy's ſtatement 2,588,470. As this laſt is derived from Portugueſe authors, who have little ſkill in ſtatiſtics, it ſeems to be exaggerated as uſual in ſuch caſes. Population.

The chief colony from Portugal is that eſtabliſhed in Braſil; and they ſtill retain many ſettlements on the coaſt of Africa, with Goa and Macao in the Eaſt Indies, the relics of great power and territory.* Colonies.

The army is only computed at about 24,000; and the militia might perhaps amount to as great a number. The naval power, once conſiderable, is reduced to thirteen ſail of the line, and fifteen frigates.[2] Army. Navy.

The revenue is calculated at 2,000,000l. ſterling, and the gold of Braſil moſtly paſſes to England in return for articles of induſtry. Revenues.

Portugal retains ſmall influence in the political ſcale of Europe. Her commerce is almoſt wholly dependant on England; but by land ſhe is expoſed to no danger except from Spain, or by the conſent of Spain. The union of the two countries would doubtleſs be advantageous to both; but might prove detrimental to Engliſh commerce, and the weight of England in the Portugueſe councils would infallibly ſubſide. Political Importance and Relations.

* Madeira has been recently ſeized by an Engliſh force.

[2] Murphy, 119.

CHAPTER III.

CIVIL GEOGRAPHY.

Manners and Cuſtoms.— Language.— Literature.— Education.— Univerſities.— Cities and Towns.— Edifices.— Roads.— Inland Navigation.— Manufactures and Commerce.

MANNERS AND CUSTOMS.

THE manners and cuſtoms of the Portugueſe are diſcriminated into thoſe of the northern and ſouthern provinces, the former being more induſtrious and ſincere, the latter more polite and indolent. In general the Portugueſe are an elegant race, with regular features, embrowned by the ſun, and dark expreſſive eyes. The prejudices of nobility are as common and pernicious in Portugal as in Spain; nor is that general intercourſe found which imparts knowledge and vigour to ſociety. All ranks ſeem fond of retirement and ſilence, and little inclined to ſocial pleaſures. The women are commonly of ſmall ſtature, yet graceful and beautiful. Like other ſouthern nations, the Portugueſe eſteem a plump roundneſs of the limbs; nor is the green, or rather ſea-green, eye ſo much applauded by the European poets of the middle ages, without its ſhare of modern admiration.[1] Ladies of rank ſtill imitate the induſtry of their anceſtors in ſpinning flax from the diſtaff; and the oriental manner of ſitting on cuſhions on the floor is often practiſed. The dreſs reſembles the Spaniſh, but the men prefer the French, with the exception of a large looſe cloak. The peaſantry remain miſerable vaſſals of the Fidalgos, or gentlemen.

In diet the Portugueſe are temperate, or rather abſtemious; and the beauty of the climate induces them to ſpend moſt of their time in the open air, a houſe being little more than a conveniency to ſleep in.

[1] Murphy, 139. The French poets are full of yeux verds. Drummond of Hawthornden (Letters, p. 252.) praiſes the green eye; which is ſtill found even in the Orkneys, as appears from the Tranſactions of the Scotiſh Antiquaries, vol. i.

The games are billiards, cards, and dice. The common people fence with a quarter ſtaff; but the chief amuſement conſiſts in the bull fights, already deſcribed in the account of Spain. The arts and ſciences are almoſt entirely neglected, except by a few among the clergy. MANNERS AND CUSTOMS.

The Portugueſe language is more remote from that of Caſtille than might be expected from the circumſtances. As the royal race was of French extract, it is ſuppoſed that many of the words are derived from the Limoſin and other dialects of the S. of France. It is a grave and ſolemn ſpeech; but would have been little known among foreigners, had it not been diffuſed by the fame of the Luſiad. Language.

The literature of Portugal may be ſaid to commence with Deniz, the ſixth ſovereign, who cultivated poetry and the belles lettres, and founded the univerſity of Coimbra. In his reign lived Vaſco Lobeira, who is ſaid to have been the original author of that famous romance Amadis de Gaula. In more recent times, Saà da Miranda has acquired reputation in paſtoral poetry. The chief hiſtorians are Joaõ de Barros, Fr. Luiz de Souſa, Fr. Bernardo de Brito Vieira, Oſorio biſhop of Sylves, Duarte Ribeiro de Macedo, the venerable Bartholomeo do Quartal, and the count de Ericeira.[a] Among the poets are celebrated Camoens, Digo Bernardes, Antonio Barboza, Bacelar, and Gabriel Pereira: two dramatic writers are alſo mentioned, Vicente Antonio Joſephar, whoſe plays are publiſhed in four volumes; and Nicola Luis, called the Portugueſe Plautus. In mathematics Pedro Nunez diſtinguiſhed himſelf at the beginning of the ſixteenth century. Of late years natural hiſtory begins to be a little ſtudied: but Portugal is the laſt of nations in that department. Literature.

Education ſeems greatly neglected in Portugal, though the univerſity of Coimbra be of ancient date. That of Evora was founded in 1553; and a college at Mafra in 1772. The royal academy is of recent erection, and the deſign aſpires to conſiderable public utility. Education. Univerſities.

Liſbon, the capital city of Portugal, was called by the ancients Ulyſſippo, and the foundation fabulouſly aſcribed to Ulyſſes. The ſituation is grand, on the north ſide of the mouth of the Tajo, and is ſheltered on Cities and Towns. Liſbon.

[a] Murphy, 157.

the

Cities and Towns.

the N. W. by a ridge of hills. The haven is capacious and excellent. This capital was regained from the Moors in the twelfth century, as already mentioned. The population is computed at about 200,000. The earthquake of 1755, a dreadful and memorable epoch among the inhabitants, has contributed to the improvement of the city, the new ſtreets being broad and well paved, reſembling thoſe in the weſt end of London. For conſtant reſidence the ladies prefer the attic floors; and ventilation and coolneſs are chiefly conſulted, grates being almoſt unknown; while in winter a warm cloak ſupplies the place of a fire.[3] There is no court end of the town; and the fineſt ſtreets are inhabited by tradeſmen. There are public walks, two theatres, and a circus for the bull feaſts. The patriarchial church is ſingularly magnificent; and the revenue is computed at 114,000l. The Engliſh have an open burial ground, in which are depoſited the remains of the celebrated Henry Fielding, an author unrivalled in the juſt delineation of life. The royal monaſtery of Belem, founded by king Emanuel in 1499, ſtands about five miles S. W. of Liſbon; and to the N. is a noble modern aqueduct completed in 1732. The conſumption of butchers' meat at Liſbon in 1789 was, 27,985 oxen, 1,279 calves, 27,562 ſheep, 11,927 hogs.

Oporto.

The next conſiderable town, eſpecially in the eye of ſtrangers, is that of Oporto, ſeated on the N. ſide of the river Douro, about five miles from the ſea, upon the declivity of a hill, ſo that the houſes riſe like an amphitheatre. The ſtreets are however narrow, and the houſes ill conſtructed. The churches are of little note: the Britiſh factory is a large and neat building. The chief exports are wine, oranges, lemons, &c., and linen cloth to the American colonies in Braſil.

Braga.

Braga is another conſiderable town in the ſame province: and in the ſecond northern diviſion are the towns of Miranda and Braganza, the laſt of which conferred the ducal title on the preſent reigning family.

In the province of Beira is the venerable city of Coimbra, with its ancient univerſity. Alentejo contains the city of Ivora, rather of an-

[3] Murphy's Travels in Portugal, 148.

cient

cient fame than of modern conſequence. Tavora, the principal town of Algarve, does not exceed 5000 inhabitants. Cities and Towns.

The chief edifices of Liſbon are the cathedral, and monaſteries, formerly mentioned. The nobility, as in Spain, crowd to the capital, whence the country is little decorated with villas. In the mountains of Cintra, the furtheſt weſtern extremity of Europe, about 20 miles W. of Liſbon, is placed a remarkable monaſtery, 3000 feet, as is ſaid, above the ſea, towards which there are remains of ancient buildings, and a curious bath repleniſhed by a never failing ſpring. On the E. of the mountain is a ſummer palace of Moreſque architecture. The environs are rich and delightful, ſupplying moſt of the fruits and greens uſed at Liſbon. Here is alſo a ſmall vineyard, that of Carcavella, yielding a peculiar grape, which gives name to our Calcavella, a wine generally fabricated in London.[4] Edifices.

Portugal ſeems to have paid no attention whatever to the conſtruction of canals; nor perhaps are they found indiſpenſable in a country abounding with rivers, and bordered with an ample extent of ſea coaſt. Inland Navigation.

The Portugueſe manufactures are few and unimportant: hats and paper have been lately fabricated at Liſbon; but the chief manufactories are thoſe of woollen cloth at Covilham, Portalegre, and Azeitaon. Manufactures and Commerce.

A conſiderable commercial intercourſe ſubſiſts with England; but the balance in favour of the latter appears to be about 400,000l. ſterling: and Ireland gains by her exports about 63,000l. annually.[5] The Falmouth packets bring frequent remittances of bullion, coin, diamonds, and other precious ſtones; and for a conſiderable time the Portugueſe gold money was current in England. Beſides woollens and hardware, England tranſmits to Portugal large cargoes of ſalted and dried fiſh, the laſt article to the annual amount of about 200,000l. The exports of Portugal are chiefly wine, oil, oranges, lemons, figs, ſugar, cotton, cork, drugs, and tobacco. Portugal alſo maintains a conſiderable trade with her flouriſhing colony in Braſil, the inhabitants of which are computed at 900,000. The articles exported to America are chiefly woollens, linens, ſtuffs, gold and ſilver lace, fiſh dried in

[4] Murphy's Travels in Portugal, 241, &c.

[5] Murphy's State, 62.

Portugal,

Manufactures and Commerce.

Portugal, hams, ſauſages, &c. with glaſs manufactured at Marinha. Braſil returns gold, ſilver, pearls, precious ſtones of various deſcriptions, rice, wheat, maize, ſugar, molaſſes, ornamental timber, and many other articles rather curious than important. The drugs, ſpices, and articles uſed in dying muſt not however be omitted. The trade with the Eaſt Indies is inconſiderable; and that with the other European nations ſcarcely deſerving notice: it is chiefly with Holland, France, Denmark, and Germany. Some trade is alſo carried on with the American ſtates.

CHAPTER IV.

NATURAL GEOGRAPHY.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

CLIMATE AND SEASONS.

THE climate of Portugal is familiarly known to be moſt excellent and ſalutary. At Liſbon the days of fair weather are computed to amount to 200 in the year; and thoſe of ſettled rain ſeldom exceed 80. The medial heat is generally about 60°.[1]

Face of the Country.

The face of the country is generally fertile, though with many acclivities; and in the N. E. corner there riſes a conſiderable cluſter of mountains, ſeemingly unconnected with the great Spaniſh chains. The numerous vineyards, and groves of orange and lemon trees, conſpire with the cryſtal ſtreams, and verdant vales, to impart great beauty and diverſity to this favoured country. The ſoil, like that of Spain, is generally light; but the agriculture in rather a neglected ſtate: and the farmers have a ſingular prejudice that ſoils of different qualities are equally adapted to any vegetables. The ground is rather ſcratched than ploughed, and is ſown immediately; nor is the operation of the harrow much regarded. Meadows are little known, except in the N. W. province between the Douro and the Minho; and many fine vales remain in a ſtate of nature. The ſtreams having generally a conſiderable fall, and the rains being violent though rare, the crops are ſometimes deſtroyed by the force of the torrents.

Soil and Agriculture.

Rivers.

The rivers of Portugal have been already enumerated in the deſcription of Spain. The Tajo is here a noble ſtream, and its eſtuary near Liſbon affords a capacious haven, from two to nine miles in breadth. Among the native ſtreams may be named the Mondego which paſſes

[1] Murphy's Trav. 220.

Rivers. by Coimbra; the Soro which runs into the Tajo; and the Cadaon
Lakes. which forms the harbour of Situval. Scarcely a lake can be traced in the map of Portugal; but ſome ſmall pools have become remarkable
Eſcura. from circumſtances, ſuch as the Eſcura ſituated on the ſummit of the mountain of Eſtralla in the province of Beira, and which is covered with ſnow during the greater part of the year. This ſmall lake is noted for a profound vortex, by the Portugueſe writers, who are fond of fable, and little verſed in the philoſophy or hiſtory of nature. Another deep pool occurs near the village of Sapellos, which is ſaid to have been the ſhaft of a gold mine worked by the Romans. The lake of Obidos, in the Eſtremadura, is ſometimes open to the ſea, and at other times cloſed with ſand: it contains variety of excellent fiſh.

Mountains. The mountains of this kingdom have not been exactly deſcribed. Thoſe in the N. E. ſeem an unconnected cluſter, as already mentioned: but the Spaniſh chain to the N. of Madrid, called by ſome the moun-
Idubeda. tains of Idubeda, enters Portugal near the town of Guarda, and purſues
Arrabeda. its former courſe to the S. W. The chain of Arrabeda, in Eſtremadura, ſeems a branch or continuation of this: it is chiefly calcareous, and affords beautiful marble. The chain of Toledo appears, as not unuſual with the moſt extenſive ranges, to ſubſide before it enters Portugal. In the province of Alentejo is however a ſmall chain, ſeven leagues in length by two and a half in breadth, running between the city of Ivora and town of Eſtramas, which may be regarded as belonging to the chain of Toledo. Eſtrala, already mentioned, gives ſource to the Mondego, and two other rivers, and belongs to the firſt mentioned chain. Monte Junto, the ancient Sagrus, is in Eſtremadura: its verdure affords a rich paſturage, and the breed of horſes was formerly celebrated.

Zoology. The zoology of Portugal may be regarded as the ſame with that of Spain.* The horſes are however much inferior, but the mules are hardy and ſtrong. The oxen are ſometimes equal in ſize to thoſe of Lincolnſhire; but even cows are rare, as the natural paſture is injured by the heat of the climate, and no attention is paid to artificial meadows.[2] The ſheep are alſo neglected, and far from numerous; but ſwine

[2] Murphy's State, 42.

* For the Botany ſee Spain.

abound, and are fed with excellent acorns, ſo that the Portugueſe hams are deſervedly eſteemed. Zoology.

The mineralogy of Portugal has been almoſt as much neglected as the agriculture. In the two northern provinces are ſeen immenſe mines, ſuppoſed to have been worked by the Romans, being perhaps the mines in the N. of Luſitania mentioned by ancient authors.[4] The mouth of the largeſt, cut through the ſolid rock, is a mile and a half in circumference, and upwards of 500 feet deep; at the bottom it meaſures 2,400 feet by 1400. Many ſubterranean paſſages pierce the mountain like a labyrinth, and the whole works are on the grandeſt ſcale. Other ancient mines are alſo found in theſe provinces. Nor were theſe mines wholly neglected in the middle ages; for there is an ordinance of king Deniz, in favour of thoſe who were employed in the gold mines of Adiſſa near the mouth of the Tajo.[5] But as the operations were attended with great expence, they were abandoned ſoon after the diſcovery of the Cape of Good Hope, it being found more profitable to import the metals from India, and afterwards from Braſil. Small veins of gold have been obſerved in the mountains of Goes and Eſtralla; and it is ſtill found in the ſand of ſome ſtreams, as in ancient times the Tajo was celebrated for this metal. Under the domination of the Spaniards a mine of ſilver was worked, not far from Braganza, ſo late as the year 1628. Tin was alſo found in various parts of the northern provinces; and near Miranda there was formerly a royal manufactory of pewter. There are lead mines at Murſa, Lamego, and Cogo, and the gallena ore is very productive of ſilver; copper is found near Elvis and in other diſtricts. The iron mines are neglected, from a deficiency of fuel; though coal be found in different parts of the kingdom, and that of Buarcos ſupply the royal foundery at Liſbon. This bed of coal is about three feet ſix inches broad, and enlarges according to the depth. Emery is found near the Douro; and many beautiful marbles abound in this kingdom. The mountains of Goes, and others, produce fine granite: and talc occurs near Oporto. Amianthus is diſcovered in ſuch quantities, that it has been recommended to the artillery in the form of incombuſtible paper. The felſpar of Eſtralla, mingled with Mineralogy.

[4] Murphy's State, 25.

[5] Ib. 43.

Mineralogy. white clay, has been found to compoſe excellent porcelain. Fullers earth occurs near Guimerans. Portugal alſo boaſts of antimony, manganeſe, biſmuth, and arſenic; and near Caſtello-Branco are mines of quickſilver. Rubies have been diſcovered in Algarve; jacinths in the rivers Cavado and Bellas; beryl or aquamarine in the mountain of Eſtralla. In ſhort Portugal abounds with minerals of moſt deſcriptions; and nothing is wanting but fuel and induſtry.

Mineral Waters. Nor is there any defect of mineral waters of various kinds. The baths of Caldas da Rainha, in Eſtremadura, are the moſt celebrated; and the next are thoſe of Chaves. Salt and petrifying ſprings alſo appear; and others to which the ignorance of the Portugueſe has aſcribed wonderful qualities, which are diſmiſſed from the modern ſchool of natural knowledge.

Natural Curioſities. Many of theſe have been claſſed among the natural curioſities of the kingdom, as well as ſome of the lakes and mountains. On the north bank of the river Douro is a high maſſy cliff, with engraved letters or hieroglyphics, ſtained with vermillion and blue; beneath which is a grotto, ſuppoſed to abound with bitumen, which proved fatal to the pariſh prieſt in his attempt to explore it in 1687. Some petrifying caves, &c. will not now be admitted to the rank of natural curioſities. Striking and ſingular ſcenes of rock, water, and ever-green groves, abound in this beautiful country.

SWISSERLAND.

CHAPTER I.

Historical Geography.

Names.—Extent.—Boundaries.—Original Population.—Progreſſive Geography.—Hiſtorical Epochs and Antiquities.

THE provinces, now known by the collective name of Swiſſerland, were in ancient times diſtinguiſhed by ſeveral appellations. By the Romans they were regarded as a part of Gaul; and the chief poſſeſſors were the Helvetii on the weſt, and the Rhæti on the eaſt; the chief city of the Helvetians being Aventicum, now Avenche. After the fall of the Roman empire, this intereſting country may, in a general point of view, be conſidered as poſſeſſed by the Alemanni on the eaſt, who alſo held Suabia, and Alſace; and on the weſt as a part of Burgundia, the inhabitants being ſtyled *Burgundi trans Jurenſes*, becauſe, with regard to France, they were ſituated on the other ſide of the mountains of Jura.[1] Divided among ſeveral lords, ſecular and ſpiritual, the inheritances of the former at length chiefly centered in the houſe of Hapſburg, afterwards the celebrated family of Auſtria: and on its emancipation in the beginning of the fourteenth century firſt appeared the modern denomination of Swiſſerland, either derived from the canton of Schweitz, diſtinguiſhed in that revolution; or from NAMES.

[1] D'Anville Etats form. en L'Europe, p. 13. 93.

Names. the general name of Schweitzers, given by the Auſtrians to this alpine people. For the ſake of preciſion modern writers reſtrict the orthography of Schweitz and Schweitzer to the canton; while the general appellation for the people is the Swiſs, and for the country Switzerland, or Swiſſerland.

Extent. In length, from eaſt to weſt, Swiſſerland extends about 200 Britiſh miles; and in breadth, from north to ſouth, about 130. The contents in ſquare miles have been eſtimated at 14,960; but a great part is loſt to human induſtry, conſiſting of vaſt rocks, partly covered with eternal ice and ſnow. Even of this country the boundaries are rather arbitrary than natural; though on the weſt mount Jura form a grand diviſion from France, and on the ſouth the Pennine Alps, a partial barrier from Italy. On the eaſt lies the Auſtrian territory of Tyrol, and on the north is Suabia, containing as it were an excreſcence of Swiſſerland on the other ſide of the Rhine, the ſmall canton of Schaffhauſen.

Original Population. The original population is thought to have been Celtic; and it was reported that at the beginning of the laſt century the people of a ſmall diſtrict uſed a language reſembling the Welch. Yet it would be difficult, either from hiſtory or from ancient appellations, to trace the reſidence of the Celts in Swiſſerland; and there is every reaſon on the contrary to believe that the Helvetians were a Gothic race, a very ancient colony of Germans. Cæſar, who firſt diſcloſed the various races of men who inhabited Gaul, no where throws a poſitive light on this ſubject; but when he deſcribes Celtic Gaul as beginning beyond the Rhone, it follows that he did not regard the Helvetii as Celts; and the proximity of Germany muſt induce us to conſider the Helvetians as a German people. In the curious collection of Goldaſtus[2] there are ſeveral gloſſaries, and fragments of the ancient language uſed in this country, even in the eighth century, which thence appears to have been pure Gothic, without any Celtic admixture. The Rhæti on the eaſt are ſaid to have been a Tuſcan colony; but a faint reſemblance in manners ſometimes led the ancients to rapid concluſions. It is difficult to conceive how the poliſhed Etrurians ſhould take refuge

[2] Rerum Alamannicarum Scriptores, 1661 fol.

in

in the midſt of barbarous nations, or why no remains of Tuſcan buildings or art have been diſcovered in this their ſuppoſed habitation. Original Population.

The progreſſive geography of Swiſſerland may be traced with conſiderable clearneſs from the conteſt of Cæſar with the Helvetians, through the claſſic, Francic, and native hiſtorians, to the preſent time. Progreſſive Geography.

The chief hiſtorical epochs may be arranged in the following order: Hiſtorical Epochs.

1. The wars with the Romans; the ſubjugation of the Helvetii, and Rhæti, and the ſubſequent events till the decline of the Roman empire in the weſt.

2. The irruption of the Alemanni, in the beginning of the fourth century, who are by ſome ſuppoſed to have extirpated the ancient Helvetians.

3. The ſubjugation of the weſtern part of Swiſſerland as far as the river Reuſs, by the Franks, who annexed that portion to Burgundy. The Griſons on the eaſt were ſubject to Theodoric, and other kings of Italy.

4. The converſion of the country to Chriſtianity by the Iriſh monks Columbanus, Gallus, and others, in the beginning of the ſeventh century.

5. The invaſion of Alemannia by the Huns* in the year 909; and the ſubſequent conteſts with theſe barbarians, till the middle of that century. The hiſtory of the abbey of St. Gal at this period is intereſting, both in a literary point of view, and from the ſingularity of the events: it was ravaged by the Huns, who were afterwards defeated by Conrad king of Burgundy, about the year 928. See the collection of Goldaſtus.

6. About the year 1030 the provinces which now conſtitute Swiſſerland began to be regarded as a part of the empire of Germany; and in the courſe of two centuries they gradually became ſubject to the houſe of Hapſburg.

7. The commencement of the Swiſs emancipation, A. D. 1307; and the ſubſequent ſtruggles with the houſe of Auſtria.

* The Ugurs, ſo called by the writers of the time. They were a branch of the Voguls, a Finniſh race.

8. The

Historical Epochs.

8. The gradual increaſe of the confederacy, the Burgundian and Swabian wars; and the conteſts with the French in Italy.

9. The hiſtory of the reformation in Swiſſerland.

10. The inſurrection of the peaſants of Bern, in the middle of the ſeventeenth century.

11. The diſſolution of the confederacy by the French invaſion, A. D. 1798.

Antiquities.

The ancient monuments of Swiſſerland are not numerous, conſiſting chiefly of a few remains of the Romans, at Aventicum and Vindernifſa. Some alſo occur at Ebrodunum, or Yverdun, and at Baden the ancient Thermæ Helveticæ. Of the middle ages are many caſtles, churches, and monaſteries, the moſt noble among the latter being the abbey of St. Gal, the library of which ſupplied the manuſcripts of three or four claſſical authors, no where elſe to be found. Some intereſting monuments relate to the emancipation of the country, and have contributed to extend the ſpirit of freedom from generation to generation.

CHAPTER II.

Political Geography.

Religion. — Ecclesiastical Geography. — Government. — Laws. — Population. — Army. — Revenue. — Political Importance and Relations.

Religion.

THE religion of the Swiss countries is in some the Roman Catholic, in others the reformed. Of the former persuasion are Uri, Schweitz, Underwalden, cantons which founded the liberty of the country, with Zug, Lucerne, Friburg, Solothurn, part of Glarus, and Appenzel. In these are found six bishopricks, and one metropolitan see. The reformed cantons are of the Calvinist, or Presbyterian persuasion; being the rich and extensive canton of Bern, with Zurich, Basel, or according to the French enunciation Basle, Schaffhausen, the greatest part of Glarus, and some portions of Appenzel. The country of the Grisons is chiefly protestant; and Vallais, an ally of the thirteen cantons, has been the scene of atrocious persecutions on account of its disaffection from the Catholic faith: but the inhabitants, to the amount of about 100,000, now profess the Roman Catholic system. In general the two persuasions live in the most amiable unity and moderation.

Government.

The government of Swisserland has been a fertile theme of discussion, from the time of Burnet and Stanyan, to the modern description of that able traveller Coxe. The more powerful cantons of Bern, Zurich, Lucerne, and Friburg, had retained much of the feudal aristocratic form: and the insurrection of the peasants, in the middle of the seventeenth century, unites, with repeated discontents, to convey no high

Govern-ment. practical eulogy on the conſtitution, as theſe ſimple and honeſt vaſſals were not influenced by theories of ſedition, but acted ſolely from their own feelings of oppreſſion. In the eye of the moſt candid obſervers the ariſtocracy had degenerated into a venal oligarchy, more intent on procuring the lucrative governments of the Bailliages, than on the promotion of the general advantage. The other cantons were more democratic; but the recent ſubverſion of the government by the French has for ſome time reduced Swiſſerland to a dependant province, with new diviſions and arrangements, which, as they may prove of very

Laws. ſhort duration it is unneceſſary here to deſcribe. The laws of courſe partook of the nature of the government of each canton; and under the ariſtocracies was ſufficiently jealous and ſevere. Yet Swiſſerland was one of the happieſt countries in Europe; and recommended itſelf to the moſt intelligent obſervers equally by moral and by phyſical grandeur and beauty.

Population. The population of this intereſting country is generally computed at 2,000,000, or about 130 to the ſquare mile. But ſo large a portion is uninhabitable, that on a ſubtraction of ſuch parts the number might be about 200 to the ſquare mile.

Army. The military force was reckoned at about 20,000; but in the late ſtruggle with France this force appears to have been divided, and little effectual. The Swiſs regiments in foreign ſervice were computed at 29; but they returned weakened in frame and morals, and ſeldom proved ſerviceable to the ſtate. The permiſſion to ſerve in foreign countries has been loudly blamed as a moral deformity; but when we conſider the poverty and population of Swiſſerland, we may conceive that the want of native reſources conſpired with the ambition and curioſity, interwoven with the character of man, to ſtimulate the youth to this path of inſtruction and preferment, while the government only connived with the national wiſh.

Revenue. The ruinous effects of French extortion cannot be divined; but the revenue of Swiſſerland was formerly computed at ſomewhat more than a million ſterling, ariſing from moderate taxation, from tolls, national domains,

domains, and foreign ſubſidies. The cantons of Bern and Zurich were conſidered as opulent; while in others the reſources hardly equalled the expenditure. Revenues.

The political importance and relations of Swiſſerland are for a time immerged in thoſe of the French republic. Should the Swiſs emancipate their country, their chief object would be protection againſt the power of France; and in this view nothing could be ſo ſerviceable as a ſtrict alliance with Auſtria. Political Importance and Relations.

CHAPTER III.

Civil Geography.

Manners and Cuſtoms.—Language. — Literature. — Education. — Univerſities.— Cities and Towns.—Edifices.—Roads.—Inland Navigation.—Manufactures and Commerce.

Manners and Customs.

AMIDST the general corruption of manners, thoſe of the Swiſs have long excited applauſe, from their moral uniformity, and frank independance. The writings of Rouſſeau, and other celebrated authors, have depicted the Swiſs manners in almoſt every point of view, ſo that the theme has become trivial. Though moderate in diet the Swiſs are attached to wine, which produces gaiety and not irritation. The houſes are generally conſtructed of wood, in the moſt ſimple form, with ſtaircaſes on the outſide; yet their appearance ſingularly coincides with the picturesque character of the country. The dreſs of the lower ranks is little ſubject to the laws of faſhion, and in many cantons there are regulations to prevent idle ornament. Among the ſuperior claſſes the manners may be conſidered as partly German, partly French; but it may be imagined that at preſent the latter preponderate. In general the Swiſs are remarkable for an intenſe attachment to their native country; and there are few who do not return there to terminate their exiſtence. This impreſſion is almoſt irreſiſtable, and liable to be awakened by the moſt minute circumſtances. Hence in the French armies the tune called the Rance des Vaches, often ſung by the Swiſs milk maids when they went to the paſtures, was carefully interdicted, becauſe it melted the rough Swiſs ſoldier into tears, and ſeldom failed to produce deſertion. This inconquerable paſſion ſeems

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to arife in part from a moral fenfibility to the enchanting eafe and frankneſs of the native manners; and in part from the picturefque features of the country, the verdant hills contrafted with Alpine fnows, and delicious vales watered by tranſparent ſtreams; ſcenes no where elſe to be diſcerned in ſuch perfection, and which muſt powerfully affect the imagination, the parent of the paſſions.

Manners and Cuſtoms.

The language of Swifferland is a dialect of the German; but the French is much diffuſed, and is often employed by their beſt authors. In the moſt ſouthern parts, bordering on Italy, the Valteline, and other territories acquired from Milan, the Italian is the common tongue. Among the Griſons in Engadina, and in ſome other parts, is ſpoken what is called the Romanſh, which ſeems immediately derived from the Latin. The Vallais, or that part of Swifferland watered by the Rhone, has alſo a particular dialect: and at the city of Sion the French begins to be ſpoken, as it is alſo the prevalent language in that beautiful part of the canton of Bern called the Pays de Vaud. The language called the Vaudois appears to have been confined to the valleys of Piedmont.

Language.

Early monuments of Swiſs literature, conſiſting as uſual of chronicles and lives of ſaints, may be found in the collection of Goldaſtus abovementioned. Since the reſtoration of letters, and the reformation of religion, Swifferland boaſts of many eminent names, as the reformer Ulric Zwingli, born at Wildhauſen; De Watt, or Vadianus, a native of St. Gal; Bullinger; Herbſt, who called himſelf Oporinus, the printer; Conrad Geſner, born at Zurich in 1516, who publiſhed an univerſal library, and ſome treatiſes on natural hiſtory; that noted quack Paracelſus, Turretin, and Oſterwald. Among the writers of the laſt century may be named Bernoulli, the mathematician, a native of Baſel; Scheuchzer, the natural hiſtorian; Haller, John Geſner, the natural philoſopher; Solomon Geſner, the poet; Bonnet, Hirzel, and Zimmerman, phyſicians; Rouſſeau, and Necker, natives of Geneva; Lavater, the phyſiognomiſt; Euler the mathematician; Court de Gebelin, a learned but viſionary writer, &c. &c.

Literature.

The

Education. The important ſubject of education has been little illuſtrated by the travellers into Swiſſerland; but as they teſtify their ſurprize at the knowledge generally prevalent among the peaſantry, there is reaſon to infer that this uſeful province is not neglected. There is an univerſity of ſome reputation at Geneva, and another at Baſel; with colleges at Bern, Zurich, and Lucerne.

Cities and Towns. Baſel. In enumerating the chief cities and towns of Swiſſerland, according to the comparative ſtandard of population, Baſel will engage the firſt attention, being ſuppoſed to contain 14,000 ſouls. This venerable city ſtands in a pleaſant ſituation, upon the banks of the Rhine, here broad, deep, and rapid, and ſuddenly turning to its long northern courſe, after a previous weſtern direction.[1] Baſel crowns both banks, and is united by a bridge. In the middle ages this city was named Baſula; and appears in hiſtory ſoon after the age of Charlemagne, having ſucceeded Augſt, or the Auguſta Rauracorum. The cathedral is an ancient Gothic edifice; and travellers have remarked a ſingularity that all the clocks are one hour too faſt, originally haſtened, as is ſaid, to defeat a conſpiracy. The cathedral contains the tomb of the great Eraſmus; and the univerſity has produced many illuſtrious men.

Bern. Bern muſt claim the next rank to Baſel, poſſeſſing a population of about 13,000.[2] This city is of ſingular neatneſs and beauty, the ſtreets being broad and long, and the houſes of grey ſtone reſting on arcades. There are ſeveral ſtreams and fountains; and the river Aar almoſt ſurrounds the city. The adjacent country is rich and fertile; and the proſpect of hills, lawns, wood, and water is bounded at a diſtance by the long chain of the ſuperior Alps, riſing like ſnowy clouds above the horizon. Bern contains ſeveral libraries, and collections of natural curioſities.

Zurich. Zurich is the third in rank among the Swiſs cities, ſituated on a large lake, amidſt a populous and fertile country, which produces abundance of wine for domeſtic conſumption. The college and plans of education are reſpectable; and the public library contains ſome curious manuſcripts.

[1] Coxe, i. 149. [2] Ib. ii. 226.

Lauſanne

Cities and Towns. Lauſanne.

Lauſanne contains about 9000 inhabitants, and is deſervedly celebrated for the beauty of its ſituation, though in ſome ſpots deep and rugged. The church is a magnificent gothic building, having been a cathedral, while the Pays du Vaud was ſubject to the houſe of Savoy.

The other chief towns are St. Gal, an ally of Swiſſerland under the former government. Mulhauſen, alſo an ally. Geneva, a city of 25,000 inhabitants, has been aſſigned to France. Fribourg and Schaffhauſen contain each about 6000 inhabitants; Lucerne, Solothurn, and Einſiedlen, about 5000 each. Few of the others exceed 3000.

Edifices.

The chief edifices of Swiſſerland are in the cities; and there are few examples of magnificent dwellings erected by men of wealth or opulence. Inland navigation is partly interdicted by the mountainous nature of the country, partly rendered unneceſſary by numerous rivers.

Commerce and Manufactures.

Commerce and manufactures do not much flouriſh in this inland region. Cattle conſtitute the chief produce of the country; and ſome of the cheeſe forms an export of luxury. The chief linen manufactures were at St. Gal. Printed cottons, and watches, alſo form conſiderable articles of ſale; nor are ſilk manufactures unknown in Swiſſerland.

CHAPTER IV.

NATURAL GEOGRAPHY.

Climate and Seaſons.—Face of the Country.—Soil and Agriculture.—Rivers.—Lakes.—Mountains.—Foreſts.—Botany.—Zoology.—Mineralogy.—Mineral Waters.—Natural Curioſities.

CLIMATE AND SEASONS

THE climate of Swiſſerland is deſervedly celebrated as ſalubrious and delightful. From its ſouthern poſition conſiderable heat might be expected; but this, though ſufficient to mature the grape, is attempered by the cold gales from the Alps and glaciers. When the ſun deſcends beyond mount Jura, on a ſummer evening, the Alpine ſummits long reflect the ruddy ſplendour, and the lakes for near an hour aſſume the appearance of burniſhed gold. The winter is however in ſome parts extremely ſevere; and the ſummer heat in the deep vales ſometimes oppreſſive.

Face of the Country.

The face of the country is generally mountainous, the moſt level parts being the Thurgau, and a part of the cantons of Baſel, Bern, Zurich, Schaffhauſen, Soleure, and Friburg. Even theſe preſent what in ſome countries would be called mountains, from 2000 to 2500 feet above the level of the ſea. No country in the world exceeds Swiſſerland in diverſity of appearance; the vaſt chain of Alps with enormous precipices, extenſive regions of perpetual ſnow, and glaciers that reſemble ſeas of ice, are contraſted by the vineyard, and cultivated field, the richly wooded brow, and the verdant and tranquil vale, with its happy cottages and cryſtal ſtream. Agriculture cannot of courſe be carried to great extent; but there is no defect of induſtry, and the grain ſeems ſufficient for domeſtic conſumption. Barley is

Soil and Agriculture.

cultivated even to the edge of the glaciers; oats in regions a little warmer; rye in thoſe ſtill more ſheltered; and ſpelt in the warmeſt parts. Yet in general the produce does not exceed five for one; and it has been neceſſary to ſupport public granaries in caſe of any deficiency. For the country being principally deſtined by nature for paſturage, the chief dependance of the Swiſs is upon his cattle, and the number being extraordinary, much land is laid out in winter forage, which might otherwiſe be productive of corn.[1] A conſiderable quantity of lint and flax is alſo cultivated; and tobacco has been lately introduced. The beſt vines are thoſe of the Pays de Vaud, the cantons of Bern, and Schaffhauſen, the Valteline, and the Vallais. There is alſo abundance of fruits, apples, pears, plums, cherries, filberts; with mulberries, peaches, figs, pomgranates, lemons, and other products of a warmer climate, in thoſe diſtricts which border upon Italy. The Vallais alſo produces ſaffron. Soil and Agriculture.

But paſturage forms the chief province of the Swiſs farm; and the meadows are often watered to increaſe the produce of hay. In the beginning of ſummer the cattle are conducted to the acceſſible parts of the Alps, by cow-herds, who are called Sennen in the language of the country, and who either account to the proprietor for the produce, or agree for a certain ſum. Thoſe herds alſo ſupport many ſwine, with the butter-milk, and other refuſe. Scheuchzer, in his firſt journey to the Alps, deſcribes the numerous preparations of milk, which forms varied luxuries of the ſwains.

The rivers of Swiſſerland are numerous; and among the moſt ſublime ſcenes of this country muſt be claſſed the ſources of the Rhine and the Rhone, two of the moſt important ſtreams in Europe. If we eſtimate their length of courſe through the Swiſs dominions, the Rhine is the moſt conſiderable; and is followed by the Aar, the Reuſs, the Limmat, the Rhone, and the Thur. Rivers.

The Rhine riſes in the country of the Griſons, from a glacier upon the ſummit of Mont Bedus, or Badur, at the head of a valley, about Rhine

[1] Buſching, xiv. 12.

RIVERS. nine leagues in length, called the Rhinewald.[2] This mountain and valley are little viſited, even by the Swiſs; and the upper part preſents dreadful deſarts of ice and ſnow, through which the ſtream deſcends, ſometimes viſible, ſometimes working a hidden track beneath frozen arches. Such is what is eſteemed the chief ſource of the Rhine, being that ſtyled by the French the Upper Rhine, and in German the Hinter, or nearer Rhine. The middle Rhine, which riſes not far from mount St. Gothard, is indeed the longeſt ſtream, whence its ſource was formerly aſcribed to that celebrated mountain; yet the moſt eaſtern is probably the more conſiderable. The celebrated Sauſſure,[3] than whom there cannot be a higher authority on theſe topics, informs us that the further Rhine, which he ſuppoſes to be ſo called becauſe it is neareſt to Germany, ariſes from a chain of mountains at the head of the valley of Diſentis, called Criſpalt, while their higheſt point is ſtyled Badur: that the middle Rhine proceeds from the valley of Medelo, an appendage of St. Gothard: and theſe two torrents united receive a third from mount Avicula, called in French the Upper Rhine, and in German the Hinter Rhein, for in ſome French maps the names are inverted.* The heights here are about 6180 feet above the ſea. From its ſource the Rhine pervades or borders Swiſſerland, for about the ſpace of 200 Britiſh miles, running N. E. to the lake of Conſtance, whence it bends W. to Baſel; where it begins its long northern courſe.

Aar. The Aar ariſes in the Alp called Grimſel,[4] but there is a further ſource in the environs of that terrible ſummit ſtyled the Schreckhorn and another from the glaciers of Finſteraar: bending its courſe to the N. W. till it arrive near Arberg, it afterwards turns N. E. receives the Reuſs and the Limmat, and joins the Rhine oppoſite to Waldſhut, after a courſe of about 150 Britiſh miles.

[2] Coxe, iii. 243. Bourrit, Deſcript. des Glaciers, tome iii. p. 62.

[3] Voyage dans les Alpes, tome vii. p. 72. 8vo.

* Mr. Coxe, and Bourrit, have confounded the Upper and Lower Rhine. See Weiſſe's map.

[4] Coxe, i. 342.

The

The Reuſs, which divides Swiſſerland into almoſt two equal parts, eaſtern and weſtern, ſprings from the lake of Lucendro,[5] on the N. W. of St. Gothard. This lake is long and narrow, the upper part being ſurrounded with black precipices, ſpotted with eternal ſnow; while the lower preſents a little verdant plain. From the other ſide of St. Gothard riſes the Italian ſtream of the Teſino, which flows into the Po not far below Pavia. The Reuſs joins the Aar, after a courſe of about 80 Britiſh miles. Rivers. Reuſs.

The Limmat is compoſed of two ſtreams, the Linth, which riſes in the S. of the canton of Glarus, and the Mat* which ſprings in the country of Sargans. About ten miles after their junction, the Limmat enters the lake of Zurich, whence it flows about 20 Britiſh miles before it join the Aar. On the banks of the Limmat commenced that dreadful conflict of the French againſt the Auſtrians and Ruſſians, which extended down thoſe of the Reuſs, the line of battle being ſaid to have reached for 90 miles; while for fifteen ſucceſſive days the whole region ſeemed enveloped in fire and ſmoke.† Limmat.

The Rhone, a noble ſtream, can only be regarded as a Swiſs river prior to its entering the lake of Geneva, after a courſe of about 90 Britiſh miles through that extenſive vale called the Vallais. This river riſes in mount Furca, the ſource being rather warm, and about 5400 feet above the ſea. Yet in truth this ſource joins a more conſiderable ſtream, from an extenſive glacier called that of the Rhone, where the majeſtic river god reſides in his palace of arches formed under perpetual ice.[6] Rhone.

The Thur, a moderate current, riſes in the S. of the country of Tokenberg, and purſues a N. W. direction to the Rhine. Other conſiderable ſtreams are the Sana, and the Emme, which join the Aar, the Inn which commences his majeſtic progreſs in the Griſons, the Adda Thur.

[5] Sauſſure, vii. 44.

* Weiſs calls this river the Senez.

† New Annual Regiſter 1799, p. 447. This conflict ſpread in breadth from the Reuſs to the Rhine. In Myttenthal, to the eaſt of Schweitz, Suwarrof was defeated.

[6] Sauſſure, vi. 284, &c.

Rivers. which waters the Valteline, and falls into the lake of Como, and the Toſs and Glatt which join the Rhine.

Lakes. The lakes of Swiſſerland are numerous and intereſting. The moſt

Conſtance. conſiderable are thoſe of Conſtance on the N. E., and Geneva in the S. W. The former is about 45 Britiſh miles in length, and in ſome places 15 in breadth. This beautiful expanſe of water is by the Germans alſo ſtyled the Boden Zee. Towards the N. W. it is divided into two parts, called the upper and the lower lake, the latter of which contains the iſle of Reichenau. Like all the other lakes of Swiſſerland, it is deeper in the ſummer than in the winter, owing to the melting of the ſnows, and is remarkable for producing large red trout.

Geneva. The lake of Geneva extends in the form of a creſcent, about 40 Britiſh miles in length, and nine at its greateſt breadth. The beauties of this lake have been celebrated by Rouſſeau; but would be conſiderably increaſed if it were ſprinkled with iſlands.

Only a part of the lake Maggiore, or that of Locarno, is ſubject to Swiſſerland; but the lake of Lugano forms an extenſive body of water in that region. The lakes of Neufchatel and Zurich are each about twenty-five miles in length, by about four in breadth. That of Lucerne is about fifteen in length, and the breadth no where above three. Next to theſe are the lakes of Thun and Brientz; of Joux and Rouſs, on the French confines; the lakes of Morat, and Bienne, of Sempach, Zug, Wallenſtadt, and others of inferior note.

Mountains. The mountains of Swiſſerland are the moſt celebrated in Europe; and are ſuppoſed to yield in height to none, except thoſe of South America, which derive their advantage from ſtanding on an elevated

Alps. plain. In a general point of view the Alps extend, in a kind of ſemicircular form, from the gulph of Genoa through Swiſſerland, which contains their centre and higheſt parts; and cloſe in the Carnic Alps on the N. of the Adriatic ſea. This grand chain of mountains has, in ancient and modern times, been divided into different portions, known by diſtinct appellations. The maritime Alps are thoſe which ariſe from the gulph of Genoa. Mont Genevre, whence ſprings the river Durance, was anciently named the Alpis Cottia, from Cottius a prince

a prince who reſided at Suza. Further to the N. were the Alpes Graiæ, now the little St. Bernard. The Alpes Penninæ conſiſted of the great St. Bernard, Mont Blanc, and the grand chain extending on the S. of the Rhone to the N. of modern Piedmont; the eaſtern part being alſo ſtyled the Lepontine Alps, from a people who inhabited that region which gives origin to the Rhone and Teſino. The Rhætian Alps extended through the Griſons and Tyrol, terminating in the Carnic, or Julian Alps. That chain which pervades Swiſſerland, from mount Sanetz in the S. W. towards the ſources of the Inn on the N. E. was known by the appellation of the Helvetian Alps. Some writers admit of more minute diviſions, as the Tridentine Alps above Trent; and the Noric Alps about the ſource of the river Tajamento. The extent of this vaſt courſe of mountains may be computed at about 550 Britiſh miles. MOUNTAINS.

The central part of this magnificent chain may be conſidered as divided into two ridges, running almoſt parallel from the ſouth weſt to the north eaſt. The firſt ridge is that of the Helvetian Alps, of which the moſt conſpicuous ſummits are the Gemmi, or Guemmi, the Schelenhorn, the Blumlis, the Geisſhorn, the Jungfrau, or Virgin horn, the Eiger, the tremendous Schreckhorn, or peak of terror, the Grimſel, the Furca; the extenſive and ſomewhat devious ridges of mount St. Gothard, the Badur, and the glaciers to the north of the further Rhine. Of this chain the St. Gothard has been long conſidered as one of the principal ſummits, becauſe important rivers run from its vicinity in every direction, but this circumſtance cannot be admitted to argue for its ſuperior height, after the accurate obſervations of Sauſſure; and rivers often ſpring from an inconſiderable elevation, paſſing in the bottoms between high mountains. The celebrated naturaliſt of Geneva has chiefly confined his obſervations to the ſouthern chain of the Alps; and the beſt account of the northern chain appears to be that communicated by M. Wyttenbach to Mr. Coxe.[7] The Jungfrau ſeems St. Gothard.

[7] Swiſſerland, ii. 309.

the

Mountains. the moſt elevated mountain of this chain; and to the weſt are the inacceſſible peaks called Gletſcherhorn, Ebenfluh, Mittaghorn, Groſſhorn, Breithorn. Next in elevation ſeem to be the Eiger, and the Schreckhorn: yet ſome ſuppoſe that they yield to the Finſter Aarhorn, which is only acceſſible from the Grimſel.* The ſummits conſiſt of granite, generally, it is believed, the white; and the ſides diſcloſe red ſlate, and calcareous maſſes. In general the granite appears in the ſouth; and the calcareous ſuperpoſitions on the north. The mountain

Guemmi. of Guemmi, or the Twins, ſo called from its two ſummits, has been deſcribed by Bourrit. To the ſouth are large deſarts and glaciers; and on the north is the romantic lake of Kandel Steig, whence there is ſaid to have been a paſſage to Lauterbrun amidſt ſingular glaciers, ſometimes reſembling magical towns of ice, with pilaſtres, pyramids, columns, and obeliſks, reflecting to the ſun the moſt brilliant hues of the fineſt gems. Yet according to the latter author[8] this chain is inferior to the ſouthern in height; as mont Blanc ſeems one maſs of ice, while in the northern chain the ice forms the ſmalleſt part.

The ſouthern chain of the central Alps rather belongs to the north of Italy, than to Swiſſerland. It extends from mont Blanc and ſome eminences further to the weſt, and embraces the great St. Bernard, the Weiſeh, mount Cervin, and mount Roſa. Paſſing to the north of the lakes of Locarno and Como, under the names of Vogelberg, St. Bernar-

* Sauſſure, vol. vii. p. 193, informs us that Mount Titlis, to the north of Mount Furca, is 10,818 feet above the ſea; and that the Schreckhorn, and the Finſteraar, ſouth of the Schreckhorn, are at leaſt 2400 feet higher. If ſo, theſe ſummits are about 13,218 feet, while Mont Blanc is 14,700 French feet: by the meaſurement of Sir George Shuckborough 15,662 feet Engliſh.

For this northern chain the reader may alſo conſult Bourrit, vol. ii. p. 134, (who obſerves its courſe from M. Sanetz to St. Gothard;) and the greater part of his third volume. St. Gothard is of great extent, with many ſummits, of which the higheſt is called Petina; and in the eaſt begins a high ridge ſtyled that of Adula, which is ſucceeded by the Criſpalt, forming the ſouthern boundary of the canton of Glarus (vol. iii. p. 62.). In his opinion, iii. 194, the Schreckhorn is the higheſt of the Swiſs Alps. General Pfeffer, who made a noted model of the northern Alps, computes the height of St. Gothard above the ſea at 9075 feet, (Coxe, i. 320.) Mr. Kirwan, Geo. Eſſ. 213, 217, ſays that the Finſteraar Horn, Schreckhorn, Jungfrau, &c. are all of granular or primitive limeſtone; and ſuppoſes their height only to exceed 10,000 feet. quoting Helv. Mag. iv. 115, 116; but perhaps the ſkirts only were examined.

[8] Bourrit, iii. 59.

dine, Spluger, Albula, Bernini, &c. it ſtretches into Tyrol * terminating in the Brunner, or Rhætian Alps on the S. of the Inn, if it be not conſidered as extending even to Saltzburg; while the firſt chain to the N. of that river, divides Bavaria from Tyrol. This ſecond chain has been ably illuſtrated by Sauſſure, who firſt viſited the ſummit of Mont Blanc, the greateſt elevation on the ancient continent, being about 14,700 feet above the level of the ſea. In his laſt journey Sauſſure alſo viſited Mont Roſa, which only yields ſixty feet in height to Mont Blanc, being about midway between great St. Bernard and the lake of Locarno, where our maps place a non-exiſtence called Mont Moro, to the N. of Macugnana in the vale of Anzaſca. Yet ſome entertain doubts whether the tremendous, and hitherto inacceſſible, heights of the northern chain do not exceed thoſe meaſured by Sauſſure; and they certainly preſent ſufficient objects for the ambition of future travellers. Mountains.

It was reſerved for this age of enterprize to diſcloſe the ſecret wonders of the ſuperior Alps. The enormous ridges clothed with a depth of perpetual ſnow, often crowned with ſharp obeliſks of granite ſtyled by the Swiſs horns or needles; the dreadful chaſms of ſome thouſand feet in perpendicular height, over which the dauntleſs traveller ſometimes ſtands on a ſhelf of frozen ſnow; the glaciers or ſeas of ice, ſometimes extending thirty or forty miles in length; the ſacred ſilence of the ſcenes before unviſited, except by the chamois and goat of the rocks; the clouds, and ſometimes the thunder ſtorm, paſſing at a great diſtance below; the extenſive proſpects, which reduce kingdoms as it were to a map; the pure elaſticity of the air exciting a kind of incorporeal ſenſation; are all novelties in the hiſtory of human adventure.

With regard to the conſtitution of theſe grand chains we learn from Sauſſure[9] that the higheſt ſummits conſiſt of a large grained granite; the mixture being white opake felſpar, greyiſh, or white ſemitranſ- Conſtitution.

* The higheſt mountains in Tyrol are ſaid to be the Plaley Kogel, 9748 Pariſian feet above the ſea: the Glockner 11,500, the Ortele 12,000. See an eſtimate of the heights of the mountains in Italy and Germany (rather in Salzburg chiefly,) Monthly Magazine, vol. ix. p. 539.

[9] Tome ii. 334.

parent

Constitution. parent quartz, and mica in ſmall brilliant ſcales, thus forming what is called the white granite. The colours ſometimes vary; and ſometimes hornblende, ſchorl, garnets, or pyrites, are interſperſed. The conſtruction ſeems to conſiſt of flat pyramids of granite, ſtanding vertically, diſpoſed like the fruit of the artichoke; thoſe of the centre being moſt upright, while the others bend towards them. Theſe flat pyramids commonly ſtand, like the grand chains of the Alps, in a N. E. and S. W. direction. Beneath, and incumbent on the granite, eſpecially towards the N. appear large maſſes of ſlate; which are followed by exterior chains of high calcareous mountains. The reader, who is deſirous of more minute details concerning thoſe magnificent features of nature, may conſult the works of Sauſſure, and other celebrated naturaliſts, who have written profeſſedly on this intereſting topic.

Foreſts. Of foreſts there does not appear to be any ſemblance in Swiſſerland; and ſuch is the ſcarcity of wood, and even of turf, that the dung of cows and ſheep is often uſed for culinary fire.

Botany. Swiſſerland, from its ſouthern climature and its elevated ſituation, may be conſidered with regard to its botany as an epitome of all Europe. From its low ſunny vallies that open upon the Italian frontier, to the higher Alps covered with glaciers and eternal ſnow, the traveller may experience in ſucceſſion the climates of Lapland, Germany, France, and Italy. Of maritime plants, on account of its inland ſituation, it poſſeſſes none; and many of thoſe which adorn, and perfume the arid tracts of heath in Spain, and Portugal are equally wanting. The ſwamps of Holland alſo poſſeſs many that are ſtrangers to Swiſſerland; but thoſe ſpecies that delight in the pure invigorating air of the mountains, that drink life and fragrance from the daſhing torrent, that bend over the margin of the tranſparent lake, and luxuriate in the ſheltered receſſes of the overhanging rock, flouriſh here in a profuſion and glow of beauty that cannot be conceived by the inhabitant of Lowland countries.

The ſpiry pinnacles of rock that rear themſelves from among the perpetual ſnows that overſpread the ſummits of the higher Alps, are almoſt wholly deſtitute of vegetation; a few of the cruſtaceous lichens,

and here and there a tuft of Silene acaulis, and ſaxifraga nivalis, and ſtellaris, compriſe the whole of their ſcanty flora. Botany.

From the very edge of the ſnow commences a zone of rocky paſturage, the native domain of the bounding chamois, but encroached upon for a few weeks in the height of ſummer by the ſheep; covered with a ſhort barren turf, except where the rills, trickling through, give birth to a more luxuriant vegetation: the effect of the cold is here ſtrikingly diſplayed, not merely in the plants being all of them truly alpine, but from their being ſhrunk and condenſed into ſuch minute ſpecimens as to require a cloſe inſpection to be aware of their vaſt variety: artia alpina and villoſa, ſoldanella alpina, aſtrantia alpina, cherleria ſedoides alchemilla pentaphyllea, chryſanthemum atratum, and gentiana nivalis are ſome of the principal.

Still further from the ſummits the paſturage becomes more abundant and acceſſible to the cattle for about forty days at Midſummer: a few of the hardier ſhrubs begin to make their appearance, and the turf here aſſumes that truly enamelled appearance that is ſo characteriſtic of Swiſſerland: the more expoſed ſituations offer to the botaniſt ſcutellaria alpina, gentiana acaulis, globularia nudicaulis, pedicularis verticillata, bartſia alpina, ſaxifraga cæſia, and roſa alpina, all of them plants of exquiſite beauty; aſtrantia major, and ſaxifraga rotundifolia of leſs oſtentatious charms, and carex filiformis with phleum alpinum, and other viviparous graſſes. In the alpine vallies, and along the courſe of the torrents, vegetation aſſumes a more ſtately appearance; the juniper, the ſavine, the ſtone pine, and alder, broken by nature into irregular thickets, diverſify the ſcene, their edges are bordered with cacalia alpina, aquilegia alpina, ranunculus aconitifolius, and pyrola minor; the caſcades are overhung with bowers of roſa alpina, meſpilus chamæmeſpilus, ſalix retuſa and reticulata; in the clefts of the rocks are tufts of ſaxifrages, auricula, and the rare ſaponaria lutea: and the ſpungy hillocks are eminently reſplendent with rhododendron ferrugineum, azalea procumbens, pinguicula alpina, and ſaxifraga aizoides.

Below all theſe, on the declivities of the mountains, commence the foreſts of larch, of pine, and fir, intermixed here and there with the

Botany. yew, the mountain aſh, and the birch; under their ſhade are found pyrola uniflora, melampyrum ſylvaticum, and nemoroſum, viola biflora, tuſſilago alpina, linnæa borealis, and other natives of the Scandinavian foreſts.

Among theſe upper woodlands are the richeſt meadows of Swiſſerland, luxuriant with graſs and clover, and ornamented with the yellow gentian, the white hellebore, actæa ſpicata, anemone alpina, and pulſatilla, and innumerable other mountain plants.

Where the firwoods ceaſe the ſubalpine regions begin, diverſified with meadows and corn fields, and foreſts of deciduous trees. The oak, the elm, the beech, the aſh, the lime, and the hornbeam are the moſt prevalent, and the borders of the ſtreams are ſhaded by poplars, and willows. The plants are chiefly thoſe which occur in the north and midland parts of France and Germany. The *dog's-tooth violet*, erythronium dens canis; digitalis lutea, and dubia, fumaria bulboſa, aſclepias vincetoxicum, cerinthe major, cyclamen europæum, ſaxifraga hirculus, and pyramidalis: the dry ſtony places are occupied by arbutus uva urſi, vaccinium vitis idæa, cratægus cotoneaſter; in the woods are found daphne gnidium, aconitum napellus, ſeveral ſpecies of helleborus, and convallaria: and the paſtures, and hedge ſides yield the orange and martagon lilies; the branched aſphodel, the iris germanica, cluſtered hyacinth, narciſſus, and daffodil, with an innumerable multitude of orchideæ.

The loweſt and warmeſt ſituations in Swiſſerland are the plains and broad vallies of Geneva, of Baſle, of the Pais de Vaud, of the Valteline, and La Vallais; in theſe we meet with numerous vineyards, and the trees and plants of the ſouth of France, and Italy. The walnut, the cheſtnut, the fig, the pomegranate, the bay, and laurel, cornus maſcula, *Cornelian cherry*; celtis auſtralis, and meſpilus amelanchier are the moſt characteriſtic among the trees; the *lavender*, lavandula ſpica; origanum creticum, *cretan origany*; hyſſopus officinalis *hyſſop*; atropa mandragora; dictamnus albus, *fraxinella*; ruta graveolens, *rue*; ſeveral kinds of ciſtus, ſida abutilon, and peonia officinalis, *peony*, are ſome of the chief of the herbaceous plants and lower ſhrubs. The valleys that

open towards Italy contain, beſides, a few plants that are not found in the reſt of Swiſſerland; ſuch as the *lilac*, ſyringa vulgaris; capparis ſpinoſa, the *caper-buſh*; amygdalus communis, the *almond*, among the fiſſures of the rocks; cactus opuntia, Indian fig; and agave Americana, *American aloe*. Botany.

The horſes of Swiſſerland are eſteemed for vigour and ſpirit; and the cattle often attain great ſize. Among the animals peculiar to the Alps may be firſt named the ibex, bouquetin, or goat of the rocks; of which a good account with an engraving is given by Mr. Coxe.[10] This animal reſembles the common goat; but the horns are extremely long and thick, and of ſuch ſtrength as to ſave them in headlong deſcents from the precipices. It is more common on the Italian than on the Swiſs Alps. The hair is long, and aſh coloured, with a black liſt along the back. The female is one third leſs than the male; and her horns are ſmall while thoſe of the male are about two feet ſix inches in length. The bouquetin will mount a perpendicular rock of fifteen feet, at three ſprings, bounding like an elaſtic body ſtruck againſt a hard ſubſtance. In the day he ſeeks the higheſt ſummits, but in the night the neareſt woods, browſing on aromatic plants and dwarf birch, and in the winter on lichens. His common cry is a ſharp ſhort whiſtle. The chace is raſhly dangerous, and expoſed to many accidents. Zoology. Ibex.

Another ſingular animal is the chamois, which belongs to the genus of antelope; and is commonly ſeen in herds of twenty or thirty, with a centinel who alarms them by a ſhrill cry.[11] The colour is yellowiſh brown; but they ſometimes occur ſpeckled. The food is the lichen with ſhoots of pine or fir. The marmot is common in the Swiſs mountains. In ſummer they feed on Alpine plants, and live in ſocieties, digging dwellings in the ground for ſummer, and others for winter. About the beginning of October, having provided hay, they retreat to their halls, where they remain torpid till the ſpring. The ſkin of this little animal is uſed for furs. The marmot may be tamed, and ſhews conſiderable docility. The ſize is between that of the rabbit and the hare. Chamois.

[10] ii. 53, &c. [11] Ib. i. 343.

Zoology. Among Alpine birds may be named the vulture, called alſo the golden or bearded vulture. The head and neck being covered with feathers it might be claſſed with the eagles, were it not for the form of the body, and ſhape of the beak. It inhabits the higheſt Alps, forming its neſt in inacceſſible rocks, and preying on the chamois, white hare, marmot, and ſometimes on kids and lambs. Among Alpine birds may alſo be named the red legged crow, and turdus cæruleus. The lakes of Swiſſerland have few peculiar fiſh.

Mineralogy. The mineralogy of this intereſting country is not ſo important as we might be led to infer from its mountainous nature. Some of the ſtreams waſh down particles of gold, as the Rhine, the Emmat, the Aar, the Reuſs, the Adda, and the Goldbach.[12] Mines of ſilver are mentioned; but the places are not ſpecified. Copper and lead are alſo found: but the chief mines are thoſe of iron in the country of Sargans. In the canton of Bern there are valuable quarries of rock ſalt;* and it is ſaid that coal and native ſulphur are not unknown. But the grand ſtores of minerals are in Piedmont, and the ſouthern ſides of the Alps; as in Hungary they are in the ſouth of the Carpathian mountains; and the richeſt minerals are alſo found in the ſouth of the Pyrenees. In ridges running north and ſouth, it is believed the eaſtern ſide is generally the moſt productive. Rock cryſtal forms perhaps the chief export of Swiſſerland, being ſometimes found in ſuch large pieces as to weigh ſeven or eight hundred weight. The calcareous part of the Alps often preſent beautiful marbles, and good ſlates are not uncommon. As to granite and porphyry the country may be ſaid to conſiſt of them. Among the Alps are alſo found ſerpentines, ſteatites, aſbeſtos, amianthus; with jaſpers, agates, and various petrifactions. Near Chiavana is a quarry of grey lapis ollaris, which has been long wrought into pots of various dimenſions, and which will ſtand the fierceſt fire. Among the mineralogic curioſities may be named the adularia, or glaſſy felſpar, on the mountains of Adula already mentioned; and the tremolite, ſo called from Mont Tremola near St. Gothard.

[12] Buſching, xiv. 11.

* Keyſler, i. 146. ſays that the ſalt works are at Bevieur, Roche, and Paner, in the Pays de Vaud.

Of

Of mineral waters the moſt remarkable are thoſe of Leuk. Scheuchzer, in his third journey, deſcribes the ſingular warm baths of Fabara, or Pfeffers, in the country of Sargans, to which the viſitants paſſed through a long narrow chaſm, by a paſſage extremely dangerous. To the S. E. are the baths of Alvenew, which are ſulphurous, and reſemble Harrowgate water. As ſuch baths commonly belong to calcareous countries, it is believed that Swiſſerland cannot boaſt of many. Mineral Waters.

To enumerate the natural curioſities of Swiſſerland would be to deſcribe the country. The Alps, the glaciers, the vaſt precipices, the deſcending torrents, the ſources of the rivers, the beautiful lakes and cataracts, are all natural curioſities of the greateſt ſingularity, and moſt ſublime deſcription. Of late the glaciers have attracted particular attention; but thoſe ſeas of ice, interſected with numerous deep fiſſures, owing to ſudden cracks which reſound like thunder, muſt yield in ſublimity to the ſtupendous ſummits clothed with ice and ſnow, the latter often deſcending in what are called avalanches, or prodigious balls, which gathering as they roll ſometimes overwhelm travellers and even villages. Nay the mountains themſelves will ſometimes burſt and overwhelm whole towns, as happened in the memorable inſtance of Pleurs near Chiavana, in which thouſands periſhed, and not a veſtige of a building was left: nor are recent inſtances, though leſs tremendous, wholly unknown. The vaſt reſervoirs of ice and ſnow give birth to many important rivers, whoſe ſources deeply intereſt curioſity. As an example, the account which Bourrit gives of that of the Rhone may be ſelected. "At length we perceived through the trees a mountain of ice as ſplendid as the ſun, and flaſhing a ſimilar light on the environs. This firſt aſpect of the glacier of the Rhone inſpired us with great expectation. A moment afterwards this enormous maſs of ice having diſappeared behind thick pines, it ſoon after met our ſight between two vaſt blocks of rock, which formed a kind of portico. Surprized at the magnificence of this ſpectacle, and at its admirable contraſts, we beheld it with rapture. At length we reached this beautiful portico, beyond which we were to diſcover all the glacier. We arrived: at this ſight one would ſuppoſe one's ſelf in another world, ſo much is the imagination impreſſed with the nature and immenſity of the Natural Curioſities.

Natural Curiosities.

the objects. To form an idea of this ſuperb ſpectacle, figure in your mind a ſcaffolding of tranſparent ice, filling a ſpace of two miles, riſing to the clouds, and darting flaſhes of light like the ſun. Nor were the ſeveral parts leſs magnificent and ſurpriſing. One might ſee as it were the ſtreets and buildings of a city, erected in the form of an amphitheatre, and embelliſhed with pieces of water, caſcades, and torrents. The effects were as prodigious as the immenſity and the height; the moſt beautiful azure, the moſt ſplendent white, the regular appearance of a thouſand pyramids of ice, are more eaſy to be imagined than deſcribed. Such is the aſpect of the glacier of the Rhone, reared by nature on a plan which ſhe alone can execute: we admire the majeſtic courſe of a river, without ſuſpecting that what gives it birth and maintains its waters may be ſtill more majeſtic and magnificent." He afterwards deſcribes the river as iſſuing from a vault of ice, as tranſparent as cryſtal; and illuminated by ſtreams of ſunſhine darting through apertures in the roof.

In the Vallais, above Siders, the banks of this river are ſingularly ſtudded with conical hills, ſometimes crowned with wood, ſometimes with ancient caſtles. On the north of Swiſſerland the Rhine, near the village of Neuhauſen, deſcends in a cataract of 40 feet, amidſt black and horrid rocks. Among the milder charms of Swiſſerland may be named the lakes, and the ſmall lake of Kandel Steig bears at one extremity the charms of ſummer, while the other preſents the glaciers and pomp of winter. Numerous rills, which deſcend from the mountains, often fall in caſcades of great beauty, among which that of Staubbach is computed at 900 feet, over a rock as perpendicular as a wall."[13] The verdant vales, ſometimes bordered with perpetual ice, alſo delight the traveller; who may be inclined, in theſe corrupt times, to conſider as a natural curioſity the frank and ſimple manners of the inhabitants.

[13] Bourrit, iii. 163.

GERMAN STATES.

CHAPTER I.

General Description of Germany.

Extent.— Boundaries.— Original Population.— Progreſſive Geography.— Hiſtorical Epochs.—Antiquities.—Religion.—Population.—Army.— Navy.— Language.— Literature —Roads.—Face of the Country.—Rivers.—Lakes.—Mountains.— Foreſts.— Botany.— Zoology.— Mineralogy.— Mineral Waters.— Natural Curioſities.

IN deſcribing an extenſive country, ſubdivided into many ſtates, it becomes indiſpenſable to give a general idea of the whole, before the reſpective territories are delineated. The geography of Germany is the moſt perplexed of any region on the globe, the great diviſions, or *circles*, being now interwoven, and almoſt antiquated, while no modern and more rational diſtribution has yet appeared. This obſervation even extends to the inferior ſtates, many of which are *enclavées*, or mortiſed in each other.

Germany, conſidered in its modern limits, extends about 600 Britiſh miles in length, from the iſle of Rugen in the north, to the ſouthern limits of the circle of Auſtria. The modern breadth, from the Rhine to the eaſtern boundary of Sileſia, is about 500 Britiſh miles: anciently the breadth extended beyond the Viſtula, about 200 miles more to the eaſt, a ſpace ſince filled by the Poles, a Slavonic nation. Extent.

This

Original Population.

This country appears to have been full of extenſive foreſts, even in the Roman period; and of courſe to have been in many parts thinly peopled, yet there are faint indications that the Cimbri, or modern Celts, poſſeſſed ſeveral tracts in the ſouth, as they certainly held a large portion of the N. W. On the N. E. of Germany the Finniſh nations are well known to have preceded the incurſions of the Goths and Slavons. The Scythians or Goths, proceeding from their original ſeats on the Euxine, expelled the Cimbri and Fins; and long before the light of hiſtory ariſes had planted colonies in the north of France, whence a part had paſſed to England, not to mention their ſouthern poſſeſſions in Gaul and Spain. The Goths on the Euxine, and the German nations, were the deſtroyers of the Roman empire in the weſt; and it is in vain with the weak authors of a fabulous age to trace their origin to Scandinavia, which in the claſſical period had only detached two colonies, the Jutes or Danes, and the Picts of Scotland.

Progreſſive Geography.

The progreſſive geography of Germany, though an intereſting topic, has never been ably illuſtrated; and the ancient is obſcure, for even D'Anville has been contented to follow the antiquated errors of Cluverius and Cellarius, men of plodding erudition, but deſtitute of judgment and ſagacity, and who have compoſed maps which have little relation with the grand and immoveable features of nature. It appears that the central parts of Germany were little known to the ancients. The ſouthern and weſtern diſtricts, as bordering on the Roman empire, had been partially explored. Roman ſhips had navigated the Baltic, and Roman armies had viſited the northern courſe of the Elbe; but the centre and the eaſt, though filled by Ptolemy with many names, muſt be regarded as nearly unknown, ſince he errs ſo widely in the arrangement of mountains and rivers. It would appear that the Roman arms had penetrated nearly in a direction due eaſt, to the neareſt circuit of the Elbe near Magdeburg, in which quarter the trophies of Druſus were erected. On the S. the Sudetic mountains, and perhaps the Erzgeberg, ſeem to bound the knowledge of the ancients; while through the centre of Germany, from the Rhine to the Viſtula, extended the vaſt Hercinian foreſt, by Heſſia, Thuringia, and the north of the Sudetic and Carpathian mountains. The mountain Melebocus

of

of Ptolemy ſeems to be the ſame with the Bructerus of others, repreſenting the moſt northern mountains of Germany thoſe of the Hartz; and the Semana Sylva may alſo be ſought near the courſe of the Roman army towards Magdeburg. There is reaſon to believe that Ptolemy, borrowing from various writers, often gives the ſame nation or tribe, under different names, and thus peoples ſpaces which would otherwiſe preſent a wide blank; ſo that the moſt authentic ſources of German geography are the writings of Pliny, Tacitus, and other hiſtorians. PROGRESSIVE GEOGRAPHY.

The interior of this country remained unexplored till the age of Charlemagne, and the northern parts for ſome centuries after that period. Longer details would not be adapted to the limits of this work; but it appeared eſſential to indicate ſome radical errors in the claſſical geography of a country, whence moſt of the modern European nations have proceeded.

Some of the grand hiſtorical epochs have already been mentioned, in deſcribing thoſe large portions of Germany, the Auſtrian and Pruſſian dominions; and ſome of the others may be briefly hinted in the account of the reſpective ſtates. Suffice it here to mention: 1. The ancient period, chiefly reſting on the account of the Roman and Francic hiſtorians. 2. The middle period. In the end of the eighth century, Charlemagne having ſubdued a great part of Germany* and Italy, was in the year 800 proclaimed Emperor of the Weſt. His ſucceſſor Louis le Debonnaire held the empire with France; but his ſon Lothaire I was reſtricted to Germany. After many inteſtine commotions Henry duke of Saxony was choſen emperor in 918, the line of Charlemagne having failed ſix years before. He was followed by his ſon Otho the Great, 936: and the line of Saxony failing 1024, was followed by that of Franconia. In the twelfth century aroſe the factions of the Guelphs and Gibelines, the latter being the partiſans of the emperor. Frederick Barbaroſſa, who aſcended the imperial throne 1152, is a diſtinguiſhed name. Long conteſts having again ariſen, the ſcepter was at length aſſigned to the houſe of Auſtria in 1273; and after ſome deviations continued to remain in that family. 3. The Hiſtorical Epochs.

* Particularly the Saxons: the ſouthern parts had before been ſubject to the Franks, and were converted to Chriſtianity.

Historical Epochs. modern period, which may be traced from Charles V; or from his grandfather Maximilian.

Antiquities. The antiquities of Germany conſiſt chiefly of a few Roman remains in the S. and W. It would be endleſs to enumerate the churches founded by Charlemagne; or the numerous caſtles created by powerful princes and barons.

Religion. The religion of the greater part of Germany may be pronounced to be the reformed, firſt introduced into Saxony by Luther. Yet the ſouth continues firmly attached to the Roman Catholic faith, now chiefly ſupported by the houſe of Auſtria. The government is that of an ariſtocracy, which elects a monarch, who may be of any family, Catholic, Lutheran, or Calviniſt. To conſider the conſtitution at length, which has been called by a German writer "a confuſion ſupported by providence," would be foreign to the nature of this work; and indeed little intereſting, as being an antiquated and inefficacious ſyſtem, expected ſpeedily to ſink under the power of Pruſſia and Auſtria. The work of Putter may be conſulted by thoſe who have patience to inveſtigate ſuch objects.

Population. The population of Germany in general is computed at little more

Army. than 25,000,000. It was ſuppoſed that the empire could, if united, ſend forth a contingent army of 400,000; but ſuch calculations are viſionary in the preſent ſtate of affairs. The revenues, political importance and relations, are now detached, and have already been in a great part conſidered under the articles of Pruſſia and Auſtria. The manners, cuſtoms, and dialects, vary according to the different ſtates.

Language. The Saxon is accounted the pureſt and moſt claſſical idiom of the German tongue; and the ſouthern dialects of Suabia, Bavaria, and Auſtria,

Literature. the moſt uncouth. The literature will beſt be conſidered under each ſtate; to ſtyle an author a German being almoſt as vague as to call him an European, ſo diſtinct are the ſeveral ſtates and the ſhades of

Roads. civiliſation. The roads in general are bad; and the poſtillions noted for inſolence and indolence. Moſt of the other topics can be illuſtrated with more preciſion in the account of ſuch ſtates as deſerve particular attention.

It

It will be remembered that in the deſcriptions of the Auſtrian and Pruſſian dominions are contained many of the eaſtern provinces of Germany. The part which remains is the weſtern half, naturally divided into two portions by the river Mayn. The remaining objects to be generally conſidered in this weſtern portion are chiefly the aſpect of the country, the rivers, lakes, mountains, and foreſts, with the botany and zoology: other topics being more appropriated to each ſtate.

Face of the Country.

To the north of the Mayn Germany chiefly preſents wide ſandy plains, which ſeem as if they had been, in the firſt ages of the world, overwhelmed by the ſea. A few hills begin to appear in the neighbourhood of Minden; and in the ſouth of the Hanoverian dominions ariſe the moſt northern mountains of Germany, thoſe of Blockſberg, and others in the Hartz. To the S. W. are the mountains of Heſſia, and others, extending towards the Rhine: while on the eaſt the rich and variegated country of Saxony, one of the moſt beautiful and fertile in the empire, extends to the ſouthern limits of the mountains of Erzgeberg, abundant in mines and ſingular foſſils.

Rivers.

The regions to the ſouth of the Mayn may be regarded as rather mountainous, while our maps repreſent Germany as one continued plain. Both portions are watered by numerous and important rivers.

Elbe.

In the north the Elbe is the moſt diſtinguiſhed ſtream, riſing in the Sudetic mountains of Sileſia; and, after running ſouth for about 50 miles, it ſuddenly aſſumes its deſtination of N. W., receives the Bohemian Mulda and Eger, the Mulda and Sala of Saxony, and the large river Havel from the eaſt, and enters the ſea near Cuxhaven, after a comparative courſe of more than 500 Britiſh miles. The chief cities on the banks of the Elbe are Dreſden, Meiſſen, Wittenberg, Magdeburg, from which it runs almoſt a ſolitary ſtream to Hamburgh. The tide is perceived to the height of 22 miles; and, when raiſed by the north wind, middle ſized veſſels may arrive at Hamburgh, but they are in general obliged to anchor a mile below the city.[1]

[1] Buſching, vi. 16. but he forgets to inform us how far the Elbe is navigable by boats or barges.

Rivers. Not far to the weſt is the mouth of the Weſer, which firſt receives that name when its two ſources, the Werra and the Fulda, join near Munden in the principality of Calenburg, about 16 Britiſh miles S. W. of Gottingen. The Werra ſprings in the principality of Hildburghauſen; and the Fulda in the territories of the biſhoprick ſo called; the former having the longeſt courſe, and being juſtly conſidered as the chief ſource of the Weſer, which thus flows about 270 Britiſh miles. The principal towns on this river are Bevern, Minden, and Bremen; the Rhine alone boaſting of numerous cities on its banks. The chief tributary ſtream is the Aller from the duchy of Brunſwick. The inundations of the Weſer are terrible, the adjacent towns and villages ſeeming to form iſlands in the ſea: hence the ſhores are eſteemed unhealthy.

Werra.

The Ems is an unimportant river, which riſes in the biſhopric of Munſter. The ſources and mouths of the Rhine have been already deſcribed. This noble river forms the grand ancient barrier between France and Germany; and its courſe may be computed at about 600 Britiſh miles. On the German ſide it is diverſified with mountains and rocks; but from Baſel to Spire the ſhores are flat and unintereſting.[2] Near Mentz they become rich, variegated, and grand; and on the confluence with the Mayn the waters are diſtinguiſhable for many leagues. The Rhinegau is not only celebrated for its wines, but for the romantic appearance of the country, the river running through wild rocks crowned with majeſtic caſtles. Hence as far as Bonn the ſhores abound with beautiful and ſtriking objects, the Rhine not ſeeming to aſſume his grandeur till after his junction with the Mayn.[3]

Rhine.

Danube. In the ſouthern part of Germany the moſt important river is the Danube, which according to the common opinion riſes near the little town of Doneſchingen in Suabia, and Count Marſigli has engraved the ſprings; but ſome place the ſources a little further to the north.* This

[2] Gardnor's Views on the Rhine.

[3] Ib. Rieſbeck, iii. 261. obſerves that the hills extend to near Cologne; but lower than thoſe to the ſouth of Mentz. At Cologne end the dominions of the German Bacchus.

* The Brege is in fact the longer current, yet it is ſaid to fall into the Danube.

noble

noble river becomes navigable a little above Ulm, where it receives the Iler. The next tributary ſtream of conſequence is the Lech, which comes from Tyrol, a ſtream diſtinguiſhed in the ſeat of the recent war; as is the Iſer, proceeding from Upper Bavaria. The Danube runs about 250 miles through this part of Germany, paſſing by Ulm, Ratiſbon, and Paſſau. To Orſova it may be conſidered as an Auſtrian river for about 550 miles; thence it is Turkiſh for 480 to the Euxine. Rivers.

The Necker is a tributary ſtream of the Rhine, riſing in the Black Foreſt, not far from the Danube, and running a pictureſque courſe of about 150 Britiſh miles through a country variegated with vineyards. Another and grander tributary ſtream of the Rhine ſprings from the lake of Fichtel See, on the mountain of Fichtelberg, eſteemed among the moſt elevated parts of Germany, as it gives ſource to four rivers running in various directions, the Mayn to the W., the Eger to the E., the Sala to the N., and the Nab to the S. This ſource is called the White Mayn; while another ſource the Red Mayn, ſo called from the red clay through which it flows, riſes near Hærnleinfreuth, in the principality of Bareuth. The Mayn, after receiving the Rednitz and other conſiderable ſtreams, joins the Rhine to the S. of Mentz. The Mayn is a muddy ſtream, but abounds with trout, carp, and other fiſh. After pervading the rich biſhoprics of Bamberg and Wurtzburg, and ſome territories of the ſee of Mentz, it waters the walls of Frankfort, formerly a city of celebrated trade; and has recently acquired freſh importance from being conſidered by German politicians as a natural boundary between the power of Pruſſia in the N. of Germany, and that of Auſtria in the S. Necker. Mayn.

To the north of the Mayn Germany preſents few lakes, the largeſt being in the duchy of Mecklenburg, where the lake of Plau extends under various names about 25 Britiſh miles in length by 6 in breadth: that of Schwerin is about 18 miles in length, while that of Ratzburg is 15. Next is one in the county of Diepholtz, and another in the county of Mansfeldt in Upper Saxony. In the more ſouthern and Alpine regions the Boden See, or lake of Conſtance, is the moſt diſtinguiſhed expanſe of water, already deſcribed under Swiſſerland. Next is the Chiem Lakes.

Lakes. Chiem See.

Chiem See in Upper Bavaria, about 14 Britiſh miles in length by five in breadth, ſometimes largely ſtyled the ſea of Bavaria. That circle, like moſt mountainous countries, alſo contains many other lakes of ſmaller account.

Mountains. Hartz.

The moſt northern mountains in Germany are thoſe of the Hartz, called the Brocken or Blockſberg.[4] Theſe mountains riſe in the form of an amphitheatre, the higheſt being what is called the great Blockſberg; which, (while the others are covered with pines and birch, thus uniting the ancient confuſion of foreſt and mountain,) only preſents white ſtinted bruſhwood: and the ſnow ſometimes remains till midſummer, and even longer in the northern cavities. On the ſummit is a ſmall hovel, a retreat for thoſe who aſcend. The river Ilſe riſes from the bottom; and other ſtreams ſpring from the hills to the N. W. and to the E., which afford many medical herbs. The height of the great Brocken is by the barometer 3021 feet; and the little Brocken 2713.

In Weſtphalia there are ſome hills near Minden;* and in the duchy of the ſame name, bordering on Heſſia, are the mountains of Winterberg, Aſtenberg, Schloſsberg, and others.[5] The Heſſian territories may be regarded as generally mountainous, eſpecially towards the north. The range of Meiſner contains a coal mine, under which is a bed of petrified wood.[6] To the north of Caſſel are many high mountains, as the Stauffenberg, the ſummit of which is called Bartelſpopf, and the Gameberg towards Munden. In the Heſſian territories are alſo the *bergs* of Doern, Behren, Schrecklen, Guden, Valken, all in the diſtrict of Zieremberg, with many in the S. E. of Felſberg; not to mention the hilly foreſt of Habichtſwald. Thence S. W. towards the Rhine are ſeveral conſiderable hills, among which may be mentioned thoſe in the weſt of Wetterau, and the ſeven hills near the Rhine almoſt oppoſite to Andernach; with the ridge of Heyrich which protects the vines of Rhinegau. To the eaſt of Frankfort on the Mayn are the hilly foreſt

[4] Buſching, x. 251.

* Rieſbeck, iii. 117, ſays that he did not obſerve one hill from Hamburgh to Embden, nor from thence to Hanover; and in Weſtphalia the heaths are more barren than thoſe of Jutland.

[5] Ib. viii. 8-9. *Berg* in German ſignifies a mountain; and is rather a ſuperfluous addition.

[6] Ib. 252.

of

of Speſſart, with the metallic heights of Fulda and Henneberg; and that river ſprings from the remarkable mountain of Fichtelberg, or the mountain of pines, near 22 Britiſh geographical miles in length, and 16 in breadth, diverſified with deſarts, precipices, high rocks, and marſhes.[7] The ſummits have various names, the Ochſenkopf being reputed the higheſt. The lake called Fichtel See is in a cavity of this mountain, called the See Loh ;* but is of little extent, being only remarkable as the ſource of the White Mayn. Other parts of this memorable mountain give riſe to the Eger, which runs to the E., and the Sala and Nab flowing to the N. and S. Mountains. Fichtelberg.

But the moſt celebrated mountains, in that part of Germany which lies to the N. of the Mayn, are the Erzgeberg, or Metallic Mountains, which riſe to the N. E. of the Fichtelberg, running between Bohemia and Saxony, but ſupplying both countries with ſilver, tin, and other metals. The Erzgeberg are not of remarkable height, yet contain much granite like thoſe of the Hartz and Heſſia; with gneiſs, in which moſt of the Saxon and Bohemian mines are found. Granular limeſtone alſo appears; and in Upper Luſatia an entire mountain is found of ſiliceous ſchiſtus, while Flinzberg conſiſts almoſt entirely of milk-white quartz.[8] Miſnia contains mountains of pitchſtone; and that ſtrong primæval ſubſtance called hornblende, which approaches to the nature of iron, is found in mighty ſtrata. In Voigtland, near Averbach, appears the famous topaz rock, conſiſting of pale topazes in hard lithomarga. Micaceous ſchiſtus and ſlate alſo form portions of the Saxon mountains; with large maſſes of trap and baſalt, often imbedded in the gneiſs, which likewiſe contains ſtrata of ſerpentine. Hornblende, ſlate, and ſandſtone, both calcareous and ſiliceous, alſo contribute to this noted chain. Thoſe of Heſſia preſent nearly the ſame opulence of primary and ſecondary ſubſtances: and a ſummit of the Meiſner, as already mentioned, conſiſts of baſalt reſting on coal. In the Hartz, Erzgeberg.

[7] Ib. ix. 171. Reckoning the German geographical mile of fifteen to the degree, as equal to four Britiſh. The French tranſlator of Buſching has been very careleſs in rendering the miles. Rieſbeck, ii. 165. deſcribes the Speſſart; and p. 199 the view from Alkoniger (about ten miles N. of Frankfort) extending about 50 miles in every direction.

* The German *Loh* or *Loch*, a cavity, is the parent of the Scotiſh Loch, a lake.

[8] Kirwan. Geol. Eſſ. 174-176.

Mountains. granite alſo abounds; with porphyry, ſlate, and other primitive ſubſtances.* The metals will be conſidered in the account of each country.

Bergſtraſs. Among the German mountains to the S. of the Mayn may firſt be named the Bergſtraſs, a ridge paſſing from near Manheim to the vicinity of Frankfort, and accompanied by a high way commanding proſpects of wide extent. On the eaſt are the high hills of Odenwald.†

Wurtemburg. Further to the S. are the mountains of Wurtemburg, riſing both on the E. and W. of that extenſive duchy. On the W. the mountains form a continuation of thoſe of the Black Foreſt, which hence proceeds ſouth to the Rhine, being the mount Abnoba of Tacitus, whence he juſtly derives the ſource of the Danube; and the Helvetian foreſt of

Black Foreſt. Ptolemy. The mountains of the Black Foreſt, in German Schwarzwald, extend from near Neuenburg, in the territories of Wurtemburg, ſouth to the four foreſt towns on the Rhine.[9] The ſouthern part is called the High, and the northern the Lower foreſt: the length being about 80 Britiſh miles. To the E. the Necker may be conſidered as a boundary; and the breadth may be computed at about 20 Britiſh miles. The eaſtern part, as uſual, preſents a gradual elevation; while the weſtern ſhows precipitous ſummits to the inhabitants of Baden and Alſace. The appellation ſeems to ariſe from the thick dark foreſts with which the aſcents are cloathed. Beſides paſturage, the inhabitants (partly ruled by Auſtria, partly by Wurtemburg,) derive advantage from the roſin of the pines, and the timber, of which they make all kinds of utenſils. Some parts are cultivated by ſpreading branches of pine, covered with ſod, which being burnt an excellent manure prepares the ground for four abundant harveſts. A branch of the Black Mountains ſpreads E. from near Sulz on the Necker towards the county

* At Pohlberg in Saxony baſaltic columns reſt on gneiſs; and thoſe of Stolpe, in the ſame country, riſe without articulation to the amazing height of 300 feet. Kirwan. Geo. Eſſ. 248—250. In the valley of Plauen are ſeveral coal mines; and there is alſo coal in Halverſtadt, a country far to the N. W. Ib. 302-308.

† See the above picturesque paſſage of Rieſbeck, who ſays, that from the Alkoniger he ſaw, with the riſing ſun, the ſummits of Odenwald and Speſſart, appearing at a diſtance like iſles of fire, while the wide intermediate vale was in darkneſs. On the other hand the proſpect extended as far as Donnerſberg, in the Palatinate.

9 Buſching, viii. 481.

of Œtingen, being more than 60 miles in length. This chain is called the Alb, and ſometimes the Suabian Alps. Buſching traces this ridge from the N. E. extremity, the ſource of the Brenz, to the weſt of the Nereſheim, by Wiſenſteig, where the mountains are higheſt. Thence they turn N. W. to Guttenberg, and W. to Neiffen, whence they paſs by Hohenzollern to the Necker, then bend S. and W. between that river and the Danube. Buſching adds, that as this chain riſes inſenſibly at Konigſbronn N. E. ſo it gradually terminates at Ebingen S. W. The principal ſummits are in the N. and W. of the ridge; and the foreſts are chiefly beech, while the open ſpaces ſupply paſturage for numerous flocks of ſheep. Mountains. Alb.

Of theſe two extenſive ridges of mountains, the Black Foreſt, and the Alb, a conſiderable portion pervades the duchy of Wurtemburg; and near Stutgard, the capital, are the mountains of Boyſerſteig, Weinſteig, and Haſenſteig. The conſtituent parts of theſe extenſive ridges have been little detailed; but a great part is calcareous, as they ſupply excellent marbles. Near Frudenſtadt in the Black Mountains are mines of ſilver and copper.

The ſouth eaſt of this portion of Germany is bounded by the high mountains of Bavaria and Salzia or Salzburg; being branches or continuations of the Swiſs or Tyroleſe Alps, but without general appellations. Ferber ſays that the high mountains of Bavaria, bordering on Tyrol, are granite; thence, as uſual, argillaceous and calcareous in the lower parts.[10] Large pieces of graſs-green quartz are found ſtudded with red tranſparent garnets, and at Munchen or Munich are worked into elegant ſnuff boxes. Some hills near Regenſburg, or Ratiſbon, are calcareous; but towards Bohemia they conſiſt of gneiſs and granite. Of the Alps of Salzburg an account has been publiſhed by Vierthaler, whence it would ſeem that they exceed in height the Carpathian chain or the Pyrenees, and only yield to the Swiſs and Tyroleſe Alps. The higheſt ſummits are ſaid to be the Sonnenblick, the Ankogel, the Wiſbacher Horn, and the Loffler in the Stillupe. Even the next to theſe in height, the Hohe Nan, or the Hockhorn, is computed at 10633 feet above the ſea; and the Groſſe Kogel in Rauris at 9100;

[10] Tour in Italy, 329.

Mountains. while ſeveral others exceed 8000 feet. The mines of this country are celebrated; and in Zillarthal, or the vale of the river Ziller, on the weſt, is found the ſubſtance called Zillerthite by the French mineralogiſts.* The chief ridge of the Salzian Alps is on the S. and E. of the country, being an elongation of the grand chain, reaching from Mount Blanc and Mount Roſa along the north of Italy through Tyrol.

Foreſts. Conſiderable remains yet exiſt of the ancient foreſts which pervaded Germany. The German word *wald*, correſponding with the old Engliſh *weald*, denotes a foreſt; and ſuch are found in the ſouth of Mecklenburg, continued eaſterly in different parts of the Pruſſian dominions; but the timber of Dantzick is ſupplied by the navigation of the Viſtula; and the ſandy regions on the S. of the Baltic ſeem little adapted to vigorous vegetation. The chief foreſts appear always to have extended along the middle regions of Germany, from the N. W. towards the S. E. The Dromling wald is to the north of Magdeburg; but the Sollinger wald, the woody mountains of Hartz, the Luttenwald, the wide foreſt of Thuringia, may be ſaid to be connected with the ancient foreſts of Sileſia, hence extending far to the E. through the centre of Poland and Ruſſia. More to the ſouth, in this part of Germany, are the Speſſart foreſt, and others. In the portion ſouth of the Mayn the vaſt Black Foreſt, and the woods along the Alb, are continued by others in various parts of Bavaria. In general the paſſion among the grandees for the chace of the wild boar, and other pleaſures of hunting, has contributed greatly to the preſervation of the foreſts.

Botany. As Spain is diſtinguiſhed by its groves of cork trees and ilex, and Scandinavia by its fir woods, ſo is Germany remarkable for its deep and almoſt impenetrable foreſts of oak: not indeed that this is the invariable characteriſtic of the country, for in an empire of ſuch great extent, and of ſo varied a ſurface, it muſt needs happen that the native vegetable productions on the ſhore of the German ocean ſhould differ conſiderably from thoſe in the receſſes of the Black Foreſt or on the frontiers of Tyrol. There is however on the whole more uniformity

* The mountains of Zillerthal are chiefly of ſlate. Kirw. 183. But the gold is found in gneiſs.

than

than might be expected, and though perhaps few plants are abſolutely peculiar to Germany, yet the abundance of ſome ſpecies, and the abſence of others, forms a ſtriking feature in the natural hiſtory of the empire.

To begin then with the hedges and roadſides, as theſe are ſituations that impreſs on a traveller at leaſt the firſt, and probably the moſt durable idea of the flora of a country. It will be remarked that the *lilac* and *ſyringa*, which with us ſcarcely ever ſtray beyond the bounds of the ſhrubbery, are by no means of uncommon occurrence in the hedges of the north of Germany; the *cornel* cornus maſcula, the *ſweet briar* and *cinnamon roſe*, roſa eglanteria and cinnamomea, are alſo common. Of the ſmaller plants the principal are veronica romana, cerinthe minor, *leſſer honeywort;* phyſalis alkekengi, *winter cherry;* ornithogalum luteum and minimum, *yellow* and *leaſt ſtar of Bethlehem*; Scilla amœna, Oenothera biennis, *evening primroſe;* and coronilla varia.

The paſtures and edges of woods afford ſeveral kinds of iris, eſpecially Germanica, Sibirica and pumila, phalaris oryzoides in moiſt places, campanula bononienſis, viola mirabilis, gentiana Bavarica and ſpicata: ſeveral umbelliferous plants, as caucalis carnoſa, and Liguſticum Peloponneſiacum: a number of bulbous rooted plants, particularly leucojum vernum, *ſnowflake;* galanthus nivalis, *ſnowdrop;* narciſſus poeticus and pſeudo-narciſſus, *narciſſus* and *daffodil:* two kinds of hyacinth, h. muſcari and racemoſus, and aſphodelus ramoſus, *branched aſphodel.*

The vegetables of the woods and groves may be divided into the ſhrubby and herbaceous; to the firſt belong, beſides the common foreſt trees and ſhrubs of England, ſambucus racemoſus, *branched elder;* Daphne cneorum, prunus mahaleb, Meſpilus Germanica, amelanchier and cotoneaſter, roſa pendulina, *pendent roſe;* collutæa arboreſcens, Geniſta Germanica, Cytiſus laburnum, *laburnum;* and Cytiſus nigricans. Of the latter the moſt worth notice are Panicum Germanicum and miliaceum, *millet graſs*; aſclepias vincetoxicum, aſtrantia major and minor, laſerpitium prutenicum, convallaria maialis, verticillatum, &c. *lily of the valley, Solomon's ſeal;* hyacinthus comoſus and botyroides, *cluſtered hyacinth;* lilium martagon, *martagon lily*; anthericum ramoſum

Botany. fum and liliago; trientalis Europæa, *winter-green;* dictamnus albus, *fraxinella;* aſarum Europæum, Actæa ſpicata, aconitum napellus and Lycoctonum, *monks-hood;* helleborus viridis, anemone hepatica, *hepatica;* digitalis ambigua and ſerapias rubra.

The mountains being inferior in height to thoſe of Swiſſerland, are deſtitute of many Alpine plants; among thoſe which they do poſſeſs the following are the chief: ſtipa pinnata, *feathergraſs;* Veronica latifolia, globularia vulgaris, cynogloſſum Apenninum, androſace elongata and ſeptentrionalis. Gentiana ciliata, *fringed gentian;* Campanula thyrſoidea, Sium Hippomarathrum, ſedum cepæa, anemone alpina, draba aizoides and arnica montana.

A few plants alſo worthy of notice are met with in the cultivated fields and vineyards, ſuch as heliotropium europæum, *tourneſol;* anagallis cærulea, *blue pimpernel;* camphoroſma Monſpeliaca, Saponaria vaccaria, and dianthus Carthuſianorum, Carthuſian pink.

Zoology. The zoology of this weſtern half of Germany correſponds ſo much with that of the Auſtrian and Pruſſian dominions, that little need be added. The German horſes are generally more remarkable for weight than ſpirit. The German wild boar is of ſuperior ſize; and thoſe of Weſtphalia are in particular eſtimation. In the N. of Germany the lynx is ſometimes ſeen; and the wolf is not unknown in the ſouth.

CHAPTER II.

The chief German States on the North of the Mayn.

Saxony.—Brunſwick Lunenburg.—Heſſia.—Mecklenburg.—Duchy of Brunſwick.—City of Hamburg.—Smaller States.—Eccleſiaſtic Powers.

IN this diviſion of Germany the elector of Saxony muſt be regarded as the chief potentate, his territories being computed at 11,680 ſquare miles, the inhabitants at 1,896,000,* and the revenue at 1,283,333l. ſterling. The name is derived from the ancient nation of the Saxons, who in the middle ages held the greateſt part of the N. and W. of Germany, and extended themſelves thus far over Thuringia, towards the territories of the Luſitzi, a Slavonic tribe who gave name to Luſatia, and were repelled by Henry the Lion duke of Saxony in the twelfth century. It is not a little remarkable, as D'Anville[1] obſerves, that Witikind of Corvey, and Adam of Bremen, aſſert that the Saxons, with whoſe aſſiſtance Thieri king of Auſtraſia conquered Thuringia in 531, came from Great Britain, having landed at Hadeler between the Weſer and the Elbe. This tradition ſeems to have been preſerved by the people, as it is alſo reported by Eginhard, who had particular opportunities of information. Saxony. Name.

The countries compriſed in the electorate of Saxony are, the duchy ſo called in the north, and Voigtland in the ſouth; Luſatia in the eaſt, and part of Thuringia in the weſt; with part of Miſnia and Henneberg: being in length from E. to W. about 220 Britiſh miles, and in breadth from N. to S. about 130. The ancient dukes of Saxony ſprung from the kings who defended themſelves with ſuch valour Hiſtorical Epochs.

* In 1792, by Hoeck's calculation, there were 2,104,320: and the army 21,576 infantry and 6,180 cavalry, ſo as including other corps to form a total of 32,000. Revenue (A. D. 1800) 7,800,000 rix dollars.

[1] Etats formés, p. 20.

againſt

Saxony. againſt France. Otho III duke of Saxony became emperor in 936, and reſigned Saxony to the houſe of Stubenſkorn or Billing, which ended in 1106; and ſoon after this potent dukedom paſſed by marriage to the houſe of Bavaria. Henry the Lion, duke of Saxony and Bavaria, 1139--1180, was of diſtinguiſhed valour and power. In 1180 the eaſtern part of Saxony was aſſigned to Bernard of Aſcania, the weſtern half being given to the archbiſhop of Cologne. Wittenberg now became the uſual reſidence. The houſe of Aſcania ended with Albert III 1422; and was followed by that of Miſnia. Erneſt and Albert, ſons of Frederic II, divided the territories in 1485, and formed two branches bearing their names. The Erneſtine branch of the houſe of Miſnia ruled till 1547, when John Frederic was depoſed by Charles V, and the electorate aſſigned to Maurice of the Albertine branch, in which it continues. In order to gain the crown of Poland, the vain wiſh of the Saxon electors, Frederic Auguſtus, 1697, abjured the proteſtant religion; but neither he nor his ſucceſſors have attempted to conſtrain the conſcience of their ſubjects. The electorate ſuffered greatly by the invaſion of the Pruſſians, in the war of ſeven years; but has ſince continued the tranquil and flouriſhing ſeat of arts and ſciences.

Religion. The religion is the proteſtant, which was here introduced by Luther; and there are two biſhopricks, Merſeberg and Naumburg. The government is, as uſual among the German princes, nearly abſolute, but conducted with moderation through different councils. Yet there are ſtates general of nobles, clergy, and burgeſſes, commonly aſſembled every ſixth year to regulate the taxation; and Rieſbeck regards the elector as a limited ſovereign, as he can iſſue no laws without the conſent of the ſtates. Army, 24,000: and the political weight in this part of Germany next to that of Pruſſia, with which it is naturally connected, and which it cannot with ſafety oppoſe. This beautiful electorate may indeed well be an object of ambition to the Pruſſian monarchs; but the jealouſy of other powers has prevented the conqueſt.

Literature. The language and literature of Saxony are the moſt diſtinguiſhed in all Germany, moſt of the writers who have refined the language having been

been born, or having reſided in this country, as Gottſched, who firſt introduced a ſuperior ſtyle, and many others. Leibnitz, Wolf, and other philoſophers were born or reſided in Saxony; among the artiſts may be named Mengs, Haſſe, and Gluck. Leipſig is a celebrated mart of German literature. There are many ſchools, colleges, and academies; among the latter the mineralogic academy of Freyberg, inſtituted in 1765, is eſteemed the leading ſchool of that ſcience. The chief city is Dreſden on the Elbe, of celebrated neatneſs, and about 50,000 inhabitants; but often expoſed to the injuries of war.* It is firſt mentioned about the year 1020; and diſplays many manufactures, with the palace, and celebrated cabinets, of the elector. Leipſig has near 30,000 inhabitants. Wittenberg has ſuffered greatly by war, particularly in the ſiege by the Auſtrians in 1760; and it is now chiefly celebrated as having been the reſidence of Luther. The manufactures of Saxony are thread, linen, laces, ribbons, velvets, carpets, paper, colours derived from various minerals, glaſs, and porcelain of remarkable beauty, and various works in ſerpentine ſtone. The country is alſo rich in native products, both agricultural and mineral; and beautiful pearls are found in the Elſter in ſhells about ſix inches long.[2] With ſuch advantages Saxony maintains a conſiderable inland commerce; and Leipſig is eſteemed one of the chief trading towns of Germany.

Saxony. Dreſden. Manufactures.

The climate is ſo favourable that wine is made in Miſnia. The face of the country, eſpecially towards the ſouth, is beautifully diverſified with hill and dale; and its richneſs between Meiſſen and Dreſden is eſteemed to rival that of the north of Italy. The land is well cultivated; the products, all kinds of grain and vegetables, with hops, flax, hemp, tobacco, ſaffron, madder, &c.† Chief rivers, the Elbe, the Saal or Sala, the Mulda, the Pleiſſe, the Elſter, with the Spree of Luſatia; all, except the Elbe and Sala, riſing in the mountains between Saxony and Bohemia. The mountains are thoſe of the Erzgeberg, already

Face of the Country. Agriculture.

* Mrs. Radcliffe did not viſit Dreſden; but by her account the praiſes of the German cities are generally unjuſt, as they impreſs an Engliſh traveller with the conſtant idea of darkneſs, dirtineſs, and inconvenience.

[2] Buſching, ix. 352.

† See Hoeck's Tables for minute particulars.

deſcribed

Saxony. deſcribed in the general account of Germany; and there are ſeveral ſmall foreſts ſupplying fuel for the mines and domeſtic purpoſes. The botany and zoology are in general common with the reſt of Germany;

Mineralogy. but the mineralogy is as uſual particular, and few countries can boaſt of ſuch foſſil opulence. The mines of Johngeorgenſtadt produce ſilver, tin, biſmuth, manganeſe, cobalt, wolfram, &c. The other mines are thoſe of Freyberg, Annaberg, Ehrenfriederſdorf, Altenberg, Eibenſtock, Lauthenthal, Schneeberg, producing ſilver, copper, lead, and other metals. At Zwiknau is found the noted terra miraculoſa; and at Schnekenſtein, near Averbach in the Voigtland, appears the topaz rock, unique in its kind. The tin of Saxony is not only a rare product, but is excellent. Jet is alſo found; and abundance of fine porcelain clay, with fullers' earth, marble, ſlate, ſerpentine, agates, and jaſper; but when Buſching, and other geographers, add diamonds, jacinths, rubies, ſapphires, and opals, they ſpeak in mere ignorance, and only mean as uſual limpid or coloured cryſtals. The annual product of the ſilver mines has been computed, in the German ſtyle, at four tons of gold,* and is thought to be rivalled by that of the cobalt converted into ſmalt or a blue pigment. The tin, copper, lead, and iron, are alſo very productive. Nor muſt coal and turf be forgotten among the mineral productions of this remarkable region. Yet Saxony cannot boaſt of mineral waters: and the chief natural curioſities are, it is believed, to be ſought in the mines.

Hanover. Next in conſequence is the electorate of Brunſwick Lunenburg,† or, as often ſtyled from the capital, the electorate of Hanover, containing about 8224 ſquare miles, with 850,000 inhabitants, and the computed revenue 962,500l. ſterling, while the military force is eſtimated at

Names. 20,000.‡ The various names of this country are wholly derived from the cities. It is ſituated in the circle of Lower Saxony, and poſſeſſed by the deſcendants of a branch of that great nation called the Oſt Fali,

* Or about 40,000l. In 1788 the product of all the mines was valued at 700,639 dollars. Hoeck.

† On the continent written and pronounced Lunéburg; the ſecond *n* being added in Engliſh merely to give ſound to the *e*. The original duchy was annexed to the city of Brunſwick and caſtle of Luneburg, whence the conjunct title. Putter, vol. i. 220.

‡ This army conſumes moſt of the revenue. See Hoeck, who computes it at 25,970.

or eaſtern Falians; while another branch to the weſt gave name to Weſtphalia. The countries compriſed in the electorate of Hanover are chiefly the duchy of Lunenburg, Bremen, and Verden, and Saxe Lauenburg adjacent to Holſtein on the northern ſide of the Elbe; with the countries of Calenburg and Grubenhagen in the ſouth, and thoſe of Diepholtz and Hoya in the weſt, and that of Danneberg in the eaſt. The ſouthern territory of Grubenhagen is detached from the reſt by the principality of Wolfenbuttel, the biſhoprick of Hildeſheim, and the country of Halberſtadt; the firſt being poſſeſſed by the duke of Brunſwick, the ſecond by its own biſhop, and the third by the king of Pruſſia, having been transferred to the electoral houſe of Brandenburg by the treaty of Weſtphalia, 1648. Hence it may be computed that the compact part of the Hanoverian dominions extends in length, eaſt to weſt, about 180 miles: and in breadth N. to S. about 100 miles; while the detached duchy of Grubenhagen, with ſouthern Calenburg or the country of Gottingen, is about 80 miles in length by 30 in its greateſt breadth. The electors of Hanover ſpring from the ancient dukes of Brunſwick. Bruno I, margrave of Saxony A. D. 955, enlarged and embelliſhed the city of Brunſwick. In 1071 the emperor Henry IV gave the duchy of Bavaria to Welph, ſon of Azo of Eſte, a powerful marquis in Italy, and of Cuniza, heireſs of the firſt Welphs earls of Altorf in Suabia. His grandſon, Henry duke of Bavaria, acquired Brunſwick along with Saxony. In 1195 William, ſon of Henry the Lion, and of Matilda of England, acquired Luneburg: and his ſon Otho, 1213, was the firſt duke of Brunſwick and Luneburg. His ſon Albert I, 1252, was ſurnamed the great. Magnus II, 1368, was ſurnamed Torquatus, from a large chain which he wore. His ſon Bernard retained Luneburg; while Brunſwick paſſed to Henry the ſecond ſon, and continued in his deſcendants till 1634. The dukes of Luneburg acquired ſome ſmall portions of adjacent territory. Henry being put to the ban of the empire in 1521, was ſucceeded by his ſon, who only aſſumed the title of duke of Zell, a ſtyle which continued till the reign of George William, 1665. In 1617 Chriſtian duke of Zell obtained poſſeſſion of Grubenhagen. In 1692 George William duke of Zell conſented that the electorate, inſtituted in favour of his family,

HANOVER.

Extent.

Hiſtorical Epochs.

Hanover. ſhould be conferred on his younger brother, as he had no male heir. Erneſt died in 1698, having married Sophia daughter of Elizabeth, daughter of James I of England. He was ſucceeded by his ſon George Lewis, elector, 1698, and king of England, 1714. The later hiſtory of Hanover is little remarkable, except by repeated devaſtations of the French; and in the recent war it was only ſecured by the powerful interference of the king of Pruſſia.

Religion. The religion is the Lutheran: there are about 750 pariſh churches, with ſeven ſuperintendants. The government is now conducted by a council of regency, and there are provincial ſtates, though rarely ſummoned.

Political Importance. The political importance of this electorate cannot be highly eſtimated in the preſent ſtate of German affairs; and from France or Pruſſia it can only be protected by the powerful mediation of England.

Literature. The literature of this country has deſerved conſiderable applauſe, ſince the inſtitution of the univerſity of Gottingen by George II: it was

Hanover. founded in 1734, and ſolemnly opened 1737. The chief city is Hanover, in the northern part of the principality of Calenburg, ſituated on the river Leine, amidſt numerous gardens and villas. This city is firſt mentioned in the twelfth century; and is ſlightly fortified, containing about 15,500 inhabitants. In the new city, on the left of the Leine,

Gottingen. is a library, particularly rich in books of hiſtory and politicks. Gottingen ſtands on the ſame river, containing about 7,600 ſouls, a neat and pleaſing town, firſt mentioned in the thirteenth century. Verden, near the junction of Aller with the Weſer, is of ſmall account, but has recently ſent ſome veſſels to the Greenland fiſhery under the Hanoverian flag. Other towns are Luneburg, which imparts its name to the electorate; Lauenburg, Zell, with Einbeck and Oſterode in the province of Grubenhagen. The manufactures and commerce of this electorate are pretty conſiderable, in metals from the Hartz, linen, cotton, ſome broad cloths, &c. The ſilver fabrics of Zell are celebrated in Germany. The chief exports are metals, coarſe linens, timber, peat, with ſome cattle and grain.

Face of the Country. The aſpect of the country is plain, partaking ſomewhat of the ſandy nature of Brandenburg, except in the ſouth, where riſe the lofty and

Agriculture. picturesque mountains of the Hartz. The agricultural products are wheat,

wheat, rye, barley, oats, peas, haricots, and pot-herbs of all kinds; with abundance of potatoes, good fruits, flax, hemp, tobacco, madder, &c. Wood abounds both for fuel and architecture, and affording conſiderable quantities of tar and pitch. Bees are particularly tended. Horſes, cattle, and ſheep are numerous; and game far from rare. The chief river is the Elbe towards the north; and the Weſer and Leine on the weſt; with the Aller and Ilmenau in the centre. Smaller ſtreams are the Loha, the Lutter, the Fuſe, with the Siber which pervades the Hartzwald in the ſouth. There are a few ſmall lakes, as that of Diepholtz, and Stinhuder; but none equal in ſize to thoſe in the adjacent province of Mecklenburg. The Hanoverian dominions contain many ſmall foreſts, and woods, beſides thoſe of the Hartz, already deſcribed in the enumeration of the German mountains. The mineralogy is rich, conſiſting of ſilver, copper, lead, iron, cobalt, zinc; with marble, ſlate, coal, turf, and limeſtone, the laſt particularly from the hill of Kalkberg near Luneburg. Two curious mineral ſubſtances, boracite and ſtaurolite, are found, the former in the Kalkberg, the latter at Andreaſberg in the Hartz: which region likewiſe preſents ſeveral ſingular features of nature, as the cavern of Blackenburg, the termination of which has never been explored, and the cave of Hamelen.*

Hanover. Rivers. Mineralogy.

Having thus deſcribed, at ſome length, the two chief and leading principalities on the north of the Mayn, a few others, the next in power, may be briefly mentioned; for it would be a vain waſte of the reader's attention, and indeed only render his knowledge more confuſed and imperfect, if even ſhort accounts were attempted of the 300 princes and ſtates which crowd the labyrinth of Germany: princes whoſe territories under a monarchy would ſink into the geographical obſcurity of thoſe of a peer or landed gentleman; and ſtates which may be more aptly ſought in a gazetteer, or in the minute and laborious pages of Buſching, whoſe chorography of Germany is the moſt complete part

* The biſhoprick of Oſnabruck in Weſtphalia may be conſidered as an appanage of Hanover, adjoining to the county of Diepholtz. By the treaty of Oſnabruck, 1648, it was decided that this biſhoprick ſhould be poſſeſſed alternately by a catholic and a proteſtant, the former at the choice of the chapter; but the latter always a prince of the houſe of Hanover, who was to have the civil and criminal ſuperiority; while the eccleſiaſtic affairs are adminiſtered by the archbiſhop of Cologne. Inhabitants about 120,000: revenue 26,250l.

of his work, and may be recommended to the reader who wiſhes for ample details.

HESSIA. In this ſecondary view of the north of Germany the firſt place muſt be aſſigned to Heſſia, a country of no mean extent nor fame. Some diſtricts, as uſual, being aſſigned to princes of the family, the ruling ſtate is denominated Heſſe Caſſel, ſo called from the capital. This territory is about 80 Britiſh miles in length, and nearly the ſame in breadth: miles ſquare, 2,760, with 750,000 inhabitants,* military force 12,000.

Names. The derivation of Heſſi from the ancient Catti is arbitrary; and it is now conceived to originate from the river Eſſe, which runs into the Fulda: but this land was a ſeat of the ancient Cattians. This country is generally mountainous; but there are many pleaſant vales, ſometimes

Products. containing vineyards, and fields fertile in corn and paſturage. It abounds in game and fiſh, and there are many foſſils and minerals: the ſands of the Eder contain particles of gold; and there was formerly a mine of that metal, but of ſmall account, near Frankenberg. There are alſo found ſilver, copper, lead, alum, vitriol, coal, fine clays, with veins of marble and alabaſter, and ſome medicinal waters. Detached parts are watered by the Rhine and the Mayn; the ſmaller rivers are very numerous. There are ſtates of three orders, nobles, clergy, and burgeſſes from Caſſel, Marburg, and other towns. The religion is the reformed, with two or three ſuperintendants. The univerſities are thoſe of Marburg and Rinteln, and that of Gieſſen belonging to Heſſe Darmſtadt, ruled by another branch of the family. There is ſome trade from the natural products, and a few manufactures of linen, cloth, hats, ſtockings, &c. The chief city is Caſſel, which contains about 22,000 inhabitants, and is pleaſing, though often injured by war; the Heſſians being more remarkable for expoſing their lives abroad, than for a vigorous defence of their native country. Hanau is alſo a conſiderable place; and the country ſo called is ſuppoſed to contain 100,000 ſouls.

MECKLENBURG. The duchy of Mecklenburg is ſuppoſed to contain 4,800 ſquare miles, with 375,000 inhabitants, or by Hoeck's account 300,000. It is divided into two parts, known by the additions of Schwerin and Guſtro, full of lakes, heaths, and marſhes; and the ſoil being ſandy,

* Hoeck ſays 700,184, including Heſs-Darmſtadt.

produces little but rye and oats, yet many parts might be capable of great improvement.* This country was long poſſeſſed by the Veneti, or Wends, being the furtheſt weſtern ſettlement of that Slavonic nation; and the peaſants remain in a ſtate of ſervitude, as was the caſe in Denmark, and many parts of Germany. The ſtates, conſiſting of nobility and burgeſſes, are aſſembled yearly to regulate the taxation. The religion is the Lutheran, with ſix ſuperintendants; and an univerſity at Roſtock. The manufactures are wool and tobacco; the exports, partly by Lubec partly by Hamburg, are grain, flax, hemp, hops, wax, honey, cattle, butter, cheeſe, fruits, feathers, dried geeſe, tallow, linſeed, wool, and timber. The ruling family deſcends from the old Venedic ſovereigns. The branch of Mecklenburg Strelitz began in the end of the ſeventeenth century, and enjoys Ratzburg, Stargard, and other provinces. MECKLENBURG.

The duke of Brunſwick poſſeſſes a territory of 1472 ſquare miles, with 170,000 inhabitants; the chief city being Brunſwick, which contains 22,000: but his territory is called the principality of Wolfenbuttel from a town of far leſs importance. This principality affords a ſpecimen of German geography, being itſelf enchaſed in the electorate of Hanover, while the biſhoprick of Hildeſheim, and the country of Halberſtadt, pervade the centre of Wolfenbuttel. The duke of Brunſwick ſhares a part of the Hartz, and its important mines:† and the reſt of the country reſembles the electorate of Hanover. Here is a rich convent of nuns at Ganderſheim of the Lutheran perſuaſion, the abbeſs being generally a princeſs of the family. There are ſeveral ſmall manufactures; and the ſtrong beer of Brunſwick, called mum, is exported from Hamburgh. The electoral family, and the dukes of Brunſwick, alike ſpring from Magnus the pious 1463; but the laſting diviſion of the principalities of Brunſwick Luneburg, and Brunſwick Wolfenbuttel, muſt be traced from the ſeventeenth century. The former branch having aſcended BRUNSWICK.

* Rieſbeck, iii. 69. obſerves that Mecklenburg is more diverſified with woods, lakes, &c. than Brandenburg, though there be no appearance of a hill in either. He ſays, ib. 123, that from Hamburgh to Hanover almoſt the whole country is a deep ſand.

† Recently exchanged with Hanover for another diſtrict. The clear product of the mines of the Hartz is computed at 453,000 dollars. The dollar may in general be eſtimated at 3s. 4d., and the florin at 2s. Tables at the end of Putter, &c.

the

Brunswick. the Engliſh throne, the latter has ſince that event aſſumed the leading title of Brunſwick.

Hamburgh. Nor muſt the city of Hamburgh be omitted, being, after Vienna and Berlin, the third city in Germany, and ſuppoſed to contain 100,000 inhabitants, or by Hoeck's account 95,000; while no other, except Dreſden and Frankfort on the Mayn, contain more than 30,000. It was fortified by Charlemagne A. D. 808.* The Elbe is here, including the iſlands, near a mile broad; and, on the other ſide of the city, the Alſter forms a baſon chiefly uſed in parties of pleaſure. The houſes are rather commodious than elegant, and there are few fine ſtreets, the population being overcrowded on account of the fortifications, built in the old Dutch taſte, with ſpacious ramparts, planted with trees. It is ruled by a ſenate of 37 perſons, the form being ariſtocratic. The religion is the Lutheran, and including the territories the clergy amount to 53. There are conſiderable breweries, and works for refining ſugar, with ſome manufactures of cloth. Formerly the trade chiefly conſiſted of linens, woollens, wine, ſugar, coffee, ſpiceries, metals, tobacco, timber, leather, corn, dried fiſh, furs, &c.; but at preſent it is the great mart of the commerce of the Britiſh iſles with the continent. The bank was founded in 1619; and the numerous libraries do honour to the taſte of the inhabitants. Its chief dependencies are the river of Alſter, the bailliage of Ham, ſome iſles and lowlands on the Elbe; and, beſides ſome diſtricts acquired from Holſtein, the bailliage of Ritzebuttel, on the north of the duchy of Bremen, including the port of Cuxhaven, and the iſle called Neuewerk, ſituated oppoſite to that port.[2]

Smaller States. In this northern half of Germany are alſo Oldenburg, now a detached principality, poſſeſſed by 75,000 inhabitants; Swediſh Pomerania, 103,000; the principality of Anhalt, 100,000; the territories of the princes of Naſſau, 130,000; of the princes of Schwarzburg in Thuringia, 100,000; the princes of Waldeck, on the north of Heſſia, 80,000; the counts of Lippe in Weſtphalia, 95,000; the counts of

* This city, with Lubeck and Bremen, alone retain the Hanſeatic league, founded 1241, and joined by a great number of cities, for the protection of their trade and commerce. This league declined in the end of the fifteenth century. Hamburg is ſuppoſed to be the third commercial city in Europe, and is certainly the firſt in Germany. By the Elbe and its tributary ſtreams it maintains a great inland commerce. See Nugent, i. 49.

[2] Buſching, xi. 146-168.

Reuſs in Vogtland,* which they ſhare with the elector of Saxony, 66,000; and the city of Frankfort on the Mayn 36,000.† SMALLER STATES.

The other chief powers are eccleſiaſtic: 1. The elector of Mentz, the firſt in the empire, has loſt his capital city, and Worms on the left bank of the Rhine; but he ſtill holds a large territory on the Mayn, with Erfurt a city of 15,000 inhabitants in the northern region of Thuringia, and the ſurrounding domain. 2. The elector of Triers, or Treves, whoſe extenſive dominions, being chiefly on the left of the Rhine, are ſeized by the French. 3. The elector of Cologne, whoſe territories are chiefly in the like predicament, but who poſſeſſes the province called the duchy of Weſtphalia. 4. In Weſtphalia are the biſhopricks of Munſter, of Oſnabruck, and Paderborn; the rich biſhoprick of Liege is immerged in the French conqueſts. 5. In Lower Saxony that of Hildeſheim. 6. In the Upper Rhine that of Fulda: and 7. the large biſhoprick of Wurtzburg, in Franconia, is chiefly on the north of the Mayn. The eccleſiaſtical electorates were computed each at more than 300,000 inhabitants; and the biſhopricks from that of Hildeſheim, the ſmalleſt, 70,000, to Wurtzburg 200,000. It is ſuppoſed that the emperor, and the king of Pruſſia, will ſecularize theſe extenſive ſees, founded and enlarged by the policy of Charlemagne and his ſucceſſors, partly for the more ſpeedy and effectual converſion of the pagans in the north of Germany, and partly to balance the riſing power of the ariſtocracy, which afterwards proved ſo ruinous to the empire. ECCLESIASTIC POWERS.

* Or the *terra advocatorum*, ſo called from an office in the empire, which began in the tenth and ended in the fourteenth century, being hereditary in the family of Reuſs. Buſching, x. 267.

† Theſe numbers are now increaſed as appears from Hoeck, who adds that the imperial city of Bremen has now 40,000 inhabitants, and Lubeck 30,000.

CHAPTER III.

The German States on the South of the Mayn.

Electorate of Bavaria conjoined with the Palatinate.—Duchy of Wurtemburg.—Anſpach.—Saizia.—Smaller States.—Eccleſiaſtic powers.

AS in the northern diviſion of Germany there are, excluſive of the Pruſſian dominions, two preponderating powers, the Electors of Saxony and Hanover; ſo in the ſouthern diviſion, excluſive of Auſtria, there are two ſuperior potentates, the Elector Palatine and of Bavaria (theſe electorates being now conjoined), and the duke of Wurtemburg.

Bavaria and Palatinate.

The elector of Bavaria and the Palatinate is the chief of all theſe ſecondary powers, his dominions being computed at 16,176 miles ſquare, with 1,934,000 inhabitants;* while thoſe of the duke of Wurtemburg yield as much to thoſe of the elector of Hanover. The

Palatinate.

French having ſeized more than half of the Palatinate on the left bank of the Rhine,† a mountainous region but abounding in mines of quickſilver, and other valuable metals, the remaining part, on the right bank

Extent.

of the river, is about twenty-four Britiſh miles in length, by the ſame at its utmoſt breadth; but contains the beſt part of the principality, pervaded by the river Neckar, producing excellent wines, and en-

Hiſtorical Epochs.

riched by the cities of Manheim, and Heidelberg. The firſt palatine of the Rhine was Eberhard of Franconia, A. D 925. The Lutheran religion was eſtabliſhed in 1556; and in 1563 appeared the famous catechiſm of Heidelberg: but ſince 1685 the Catholic ſyſtem has predominated. In the thirteenth century the houſe of Bavaria acquired

* Hoeck computes Bavaria at 1,239,900, the Palatinate at 305,000.

† The elector Palatine has alſo loſt the duchy of Julich, or Juliers. Yet he retains the duchy of Berg, on the right bank of the Rhine, with its noted capital Duſſeldorf. Hoeck computes Julich at 192,217; Berg, 261,504 ſouls. See Render's Tour in Germany, 1801, 2 vols. ii. 137.

the

the Palatinate by marriage, and from it the modern family deſcended. Frederick V, Elector Palatine, 1610, married Elizabeth daughter of James I of England; and aſpired to the crown of Bohemia, but was vanquiſhed, and the electorate transferred to the houſe of Bavaria. Yet by the treaty of Weſtphalia, 1648, his ſon regained a part of his dominions, and was created an eighth Elector of the empire. This branch failing in 1685, was ſucceeded by the collateral branch of Deux Ponts. Wolfgang of Deux Ponts left two ſons, Philip and John, the firſt being the ſource of the new Palatine dynaſty, and the other of the houſe of Deux Ponts. In 1693 the Palatinate was rendered almoſt a deſert by the notorious ravages of the French. The Palatinate and Bavaria have recently been inherited by the branch of Deux Ponts, the ſon of the elector being now nominal duke of Deux Ponts.* PALATINATE.

The hiſtory of Bavaria is yet more important. This country was governed by dukes, under the kings of Auſtraſia; and in the ninth century princes of the Francic family aſſumed the ſtyle of Kings of Bavaria, while Liutpold, 889, was the firſt duke; and his progeny extend to the preſent day, though interrupted in 946, when, Berthold dying without children, the emperor Otho gave Bavaria to his brother Henry of Saxony. In 1071 Welph, ſon of Azo of Eſte, became duke of Bavaria; which in 1138 paſſed to the houſe of Auſtria, but in 1154 returned to the houſe of Welph, in the perſon of Henry the Lion. In 1180 it finally returned to the firſt family, by the ſucceſſion of Otho BAVARIA. Hiſtorical Epochs.

* In 1385, Everard, laſt earl of Deux Ponts, ſold the reverſion of his domain to the Palatine family. In 1444 it was united with Veldenz. Thus the family of Deux Ponts alſo ſpring from that of Bavaria, whoſe ſource is Otho of Wittelbach, who obtained the Duchy 1180, on the proſcription of Henry the Lion, duke of Saxony and Bavaria. Otho, earl of Wittelbach, (a caſtle in the duchy of Bavaria near Aicha, on the Paar, which runs into the Danube to the eaſt of Ingoldſtadt,) was deſcended, in the eighth degree, from Arnolf earl of Scheyren, ſecond ſon of Arnolf the bad, the ſecond duke of Bavaria, A. D. 907, ſon of Liutpold the firſt duke, whoſe origin has not been aſcertained, though the ſtock of royal families; for in 1654 Chriſtina, the laſt of the houſe of Vaſa, transferred the Swediſh crown to Charles duke of Deux Ponts, her couſin, his father having married Catharine daughter of Charles IX of Sweden. Of this family were Charles XI and XII; and Ulrica who married Frederic prince of Heſſia, afterwards king of Sweden; followed in 1751 by the preſent family of Holſtein, ſprung from the royal Daniſh houſe of Oldenburg.

Bavaria. of Wittelbach, a deſcendant of Arnolf, ſecond duke of Bavaria, after the family had been unjuſtly deprived for more than two centuries. The emperors Lewis 1314, and Charles VII, 1740, were of this family.

Extent. The duchy of Bavaria is divided into Upper and Lower, and what is called the Higher Palatinate (or that of Bavaria). The length from N. to S. is ſomewhat interrupted, but may be about 150 Britiſh miles, and the breadth about 120. Upper Bavaria is, in a great degree, mountainous; and covered with foreſts, interſperſed with large and ſmall

Mineralogy. lakes. Lower Bavaria is more plain and fertile. There are mines of ſilver and copper near Podenmais, in the bailliage of Viechtach, and of lead at Reichenthal, with many quarries of marble, and mineral ſprings. But the chief mineral riches of Bavaria conſiſt in the ſalt ſprings at Traunſtein, which pervade mountains of ſaline earth, like thoſe at Hallen in the archbiſhoprick of Salzburg, and occupy many people in productive induſtry. There are other ſprings at Reichenthal.[4] The mountains of Upper Bavaria may be conſidered as branches of the Alps. The chief rivers are the Danube, the Inn, the Iſer, the Lech, and the Nab; and in the Palatinate the Necker. The religion is the Roman Catholic, which, as uſual, damps the ſpirit of induſtry; and the manufactures are of ſmall account, the chief exports being corn and

Revenue. cattle. The revenue is computed at 1,166,600l.; and the military force at 12,000: both being greatly inferior to the ſmaller electorate of

Munich. Saxony. The chief city is Munich, eſteemed the moſt elegant in Germany, with 38,000 inhabitants; in Lower Bavaria are Landſhut and Strauben. Ratiſbon, or Regenſburgh, *Regina*, though ſeized by the elector of Bavaria, 1703, is regarded as a free and Imperial city. In

Manheim. the palatinate of the Rhine is Manheim, ſuppoſed to hold 24,000 inhabitants; and Heidelberg, noted for wines, and a capacious tun, and formerly for a valuable library transferred to the Vatican. This city, amidſt the infamous deſtruction of the Palatinate, was reduced to mere walls, but afterwards reſtored by the induſtrious Lutherans.

[4] Voyage d'un Français aux ſalines de Bavière et de Salzbourg en 1776. Paris an V.; the author is Barbé Marbois.

The

The Bavarians are little diſtinguiſhed in literature; but are a vigorous race adapted to the fatigues of war. There is however an univerſity at Ingolſtadt, and an academy of ſciences at Munich. The ſtates conſiſt, as uſual, of clergy, nobility, and burgeſſes; but before the acceſſion of the houſe of Deux Ponts, the adminiſtration had become the moſt lethargic of any in Germany.* Hence its political importance has in ſome meaſure declined: and in the dangerous ſituation between France and Auſtria, it may be difficult for this power long to preſerve a ſhadow of independance. BAVARIA. Political Importance.

The ſecond potentate in the ſouth is the duke of Wurtemburg, whoſe dominions are computed at 3,200 ſquare miles, with 600,000 inhabitants. This duchy derives its name from the caſtle of Wurtemburg, ſituated in the bailliage of Canſtadt. There were earls of Wurtemburg in the twelfth century; and in 1495 the ducal title was conferred on earl Everard. In caſe of the extinction of the family, the houſe of Auſtria pretends to the ſucceſſion, and even now aſſumes the title and arms of Wurtemburg. The dukedom of Teck was added in the fourteenth century. The revenue is computed at 245,000l., the military force at 6000. This duchy forms the moſt conſiderable and fertile part of the circle of Suabia; and is indeed, after Saxony, one of the beſt in the empire. The mountains of the Black Foreſt on the weſt, and thoſe of the Alb on the S. and E., not only diverſify the face of the country, but ſupply timber, fuel, and mines. The chief grain is ſpelt, and ſome barley, and wheat, with flax, lint, &c. and the fertility ſuffices even for export. The wines of the Neckar are not ſo abundant as to prevent the uſe of cyder. There are mines of ſilver and copper near Freudenſtadt, and at Konigſwart; of ſilver at Konigſtein; and of copper at Guttach, near Hornberg Iron is alſo found, but was chiefly brought from mont Beliard, now perhaps loſt in the French acquiſitions. Cobalt, ſulphur, coal, porcelain clay, marble, alabaſter, black amber, or rather obſidian, from the Alb, with the ſalt works at WURTEMBURG. Name. Products. Mineralogy.

* By the accounts of Rieſbeck, and others, the government of the Palatinate of the Rhine, while detached, was miſerable.

WURTEMBURG. Sulz, conſtitute the other mineral productions.* There are many warm baths and medical ſprings, and the chief river is the Neckar, which, with the Nagold, and its other tributary ſtreams, enlivens and

States. fertiliſes the duchy. The ſtates conſiſt of fourteen ſuperior clergy, and the deputies of ſixty-eight towns and bailliages. The religion is the Lutheran, with ſome Calviniſts, and ſome colonies of the Vaudois. The church is ruled by four ſuperintendants, who are ſtyled abbots, and thirty-eight rural deans: a ſynod is annually held in the autumn.

Education. Education, and eccleſiaſtical ſtudies in particular, are favoured by laudable inſtitutions, not to be found in any other proteſtant country. The ſeminary of Tubingen uſed to contain about 300 ſtudents; and

Manufactures there is an academy of education at Stutgard. There are manufactures of pottery, glaſs, woollen, linen, and ſilk; which, with the natural products of the country, ſupply a conſiderable export: the imports are

Stutgard. by Frankfort on the Mayn. The chief city is Stutgard, agreeably ſituated on a rivulet which flows into the Neckar, and the ducal reſidence ſince the year 1321. Some of the buildings are elegant, and there is a cabinet of natural and artificial curioſities. It has not recently ſuffered much from war, but was greatly injured by a conflagration in 1761. The ſecond town is Tubingen on the Neckar, with an univerſity founded in 1477. The other towns are ſmall but numerous, and the villages thickly placed in a populous and flouriſhing country.

Among the ſecondary powers, in this ſouthern diviſion of Germany,

Anſpach. muſt firſt be named Anſpach, or Onolſbach, which, with Bareuth, maintains a population of 320,000 on 2,320 ſquare miles. Theſe regions are mountainous and ſandy; but near the Mayn yield good wine. The chief mines are of iron, the others being neglected. Near the Fichtelberg, Bareuth produces a variety of beautiful marbles, and ſome curious minerals. The principality of Bareuth is alſo known by

* There is a remarkable cavern at Pfulingen, and another in the Albian mountains. They are here called *locks*, or *lochs*. Keyſler, i. 116.

the

the name of Culmbach; and, with Onolſbach, forms the chief power in Franconia, now annexed to the ſovereignty of Pruſſia. ANSPACH.

The country of the Salz, alſo called Salzia, and the archbiſhoprick of Salzburg, is a compact and intereſting region, about 100 Engliſh miles in length, and 60 at its greateſt breadth; computed at 2,880 ſquare miles, and a population of 250,000; by Hoeck's account, only 200,000. The archbiſhop is primate of all Germany, the ſee being founded by St. Rupert, an Engliſhman, in 716.[6] The chapter conſiſts of twenty-four perſons, of noble extract; and the houſe of Auſtria has contrived that a great majority ſhould be from her domains. No tax can be impoſed without the conſent of the provincial ſtates, compoſed of clergy, nobility and burgeſſes, the deputies being at the ſame time the tax-gatherers.[7] In political affairs this ſee is wholly ruled by Auſtria, there being twenty-two Auſtrians in the chapter. The chief ſuffragans are the biſhops of Chiem; of Gurck, and Lavant, in Carinthia; and Seckau, in Stiria; who all ſwear fidelity to the archbiſhoprick, which poſſeſſes many fair lordſhips in Auſtria, Stiria, and Carinthia. Salzburg, the ancient Juvavum, has an univerſity, with about 20,000 inhabitants; the other towns being of little moment. The Roman Catholic ſyſtem has baniſhed many induſtrious inhabitants, who have chiefly taken refuge in the Pruſſian dominions. The ſalt works at Hallen, about twelve miles S. of Salzburg, are very lucrative. They are in the mountain of Durenburg, which is excavated in galleries, occaſionally filled with water, till it be impregnated with ſaline particles.[8] There are alſo in Salzia ſome mines of ſilver and lead; and one of gold at Gaſtein, and others along the northern ſide of the Alps to Zillarthal, ſo that the archbiſhoprick is ſuppoſed by Bergman to yield only to Hungary in the production of this precious metal. The copper is often impregnated with gold, which uſed to be a ſource of

Salzia.

Salzburg.

Mineralogy.

[6] Putter, i. 44 Buſching, &c. St. Boniface afterwards founded many biſhopricks in the ſouth of Germany. Columban and Gallus were the apoſtles in Swabia. Kilian in Franconia, Wilibrod in Friſia, were all from England and Ireland.

[7] Barbé-Marbois, p. 101.

[8] Ib. 60. 73.

gain

Salzia. gain to the melters of Nurenburg and Augſburg. It is ſaid that emeralds and beryls are here found in micaceous ſchiſtus. Among the minerals may alſo be named the *bitter ſpath*, or muriatic ſpar, ſteatite ſerpentine, talc, lapis ollaris, aſbeſtos, actinolite, ſappare, and thallite, or green ſchorl. The aſparagite of Werner is only found in Zillarthal in talc of a greeniſh white. There are mineral waters in the vale of Groſſarl, from a calcareous ſource as uſual; but it is ſingular that the warm baths of Wildvad, in the valley of Gaſtein, proceed from rocks of granite and gneiſs.[9]

Smaller States. This grand ſouthern diviſion of Germany alſo contains the territories of the Margraves of Baden, 832 ſquare miles, with 200,000 inhabitants; the lands of Heſſe Darmſtadt, belonging to another reigning branch of the houſe of Heſſia, reſiding at Darmſtadt, and alſo poſſeſſing territories on the northern ſide of the Mayn, both eſtimated under the article of Heſſia. The imperial city of Nuremberg has conſiderably declined, but it ſtill contains about 30,000 ſouls, while Ulm has not above half the number. Auſtria enjoyed many extenſive territories in Suabia, ſome even bordering on the Rhine, and ſeveral on both ſides of the Danube: and theſe detached provinces were abſurdly ſtyled Further Auſtria. Among the ſmaller ſecular territories in that circle, may be named thoſe of the houſe of Truchſeſs, ſo called as being hereditary cup-bearers of the empire, and otherwiſe ſtyled counts of Waldburg. The counts Fugger, deſcended from the ancient opulent merchants of that name, poſſeſs eſtates on the weſt of the Lech. To enumerate other ſmall ſecular principalities would only obſtruct the intention of this deſcription, which is to impreſs on the memory the more important, which can alone claim notice in the page of hiſtory; while the ſmaller princes may indeed be named as generals, but their territories are beneath the notice of general geography, and have as little claim to hiſtorical regard, as the eſtates of peers under a monarchy.

[9] Journ. des Mines, No. 47. p. 833. &c.

Ecclesiastic Powers.

But as the intention of ſecularizing the numerous and wide eccleſiaſtical territories in Germany muſt engage much political conſideration, it is proper to add here, as has been done in the former chapter, a liſt of the chief ſees to the ſouth of the Mayn. 1. The archbiſhoprick of Salzburg, being among the leading powers, has been already deſcribed. 2. The large biſhoprick of Wurtzburg, being chiefly on the north of the Mayn, has been mentioned in the former chapter: the next in importance, but often held in conjunction with the former, is that of Bamburg, ſuppoſed to contain 180,000 inhabitants. 4. The biſhoprick of Speyr, or by the French enunciation Spire, was ſuppoſed to contain 50,000, but of theſe probably one half, on the weſt bank of the Rhine, are now ſubject to France. 5. The biſhoprick of Aichſtett in the ſouthern extremity of Franconia. 6. Suabia preſents the large and opulent biſhoprick of Augſburg, with an extent of territory about ſeventy Engliſh miles in length, but the medial breadth not exceeding twelve. 7. Of Conſtance, whoſe territories alſo extend into Swiſſerland. 8. A great part of the biſhoprick of Straſburg. 9. The large abbatial territories of Kempten, Buchau, and Lindau; with the priory of Ellwangen in the north. 10. The biſhoprick of Paſſau, in Bavaria, is computed at 25,000 inhabitants. 11. That of Freyſingen, with the county of Werdenfels, near the Rhætian Alps, at 23,000. 12. The biſhoprick of Ratiſbon, which is of ſmall extent. The chapters of Mentz, Wurtzburg, and Luttich, or Liege, preſerved ſome appearance of freedom; while the others were chiefly influenced by the power of Auſtria.

For a more minute and particular view of all the German ſtates, including the Auſtrian and Pruſſian dominions, than was conſiſtent with the nature of this work, the reader may be referred to the recent laborious publication by Hoeck, who has carefully indicated the ſources whence he derives his intelligence. It muſt be added that his work is merely what is called in Germany ſtatiſtic, being a ſeries of tables preſenting

ſenting the extent of each country and diſtrict in ſquare miles, the number of towns, villages, and houſes, the population, the natural productions, the manufactures, the commerce, the finances, number of univerſities, and ſchools, ſtate of the army. The other geographical topics are, by the Germans who invented the term, conſidered as foreign to the ſcience of ſtatiſtics.

ITALIAN STATES.

CHAPTER I.

General Description of Italy.

Diviſions.—Boundaries.—Extent.—Original Population.—Preſent Population.—Face of the Country.—Rivers.—Lakes.—Mountains.—Botany.—Zoology.

THE claſſical and intereſting country of Italy has been ſo repeatedly deſcribed, that it has become familiar even to the common reader. As it is ſuperfluous to write without adding to knowledge, this deſcription ſhall, in conſequence, be reſtricted to very narrow limits: and will alſo of neceſſity be ſomewhat abridged by the preſent unſettled ſtate of the country, which, on many topics, ſcarcely leaves materials even for conjecture. Hence the political and civil departments of geographical deſcription are almoſt obliterated; and this brief account ſhall chiefly delineate thoſe laſting features of nature which no political change can influence.

Italy may be regarded as having been, in all ages of hiſtory, divided into three parts, the ſouthern, the central, and the northern. The ſouthern part having received many Greek colonies was honoured with the ancient appellation of Magna Græcia: the centre was the ſeat of Roman Diviſions.

Divisions. Roman and Etrurian power; while the northern was the Ciſalpine Gaul. In the middle ages the kingdom of Lombardy, afterwards ſub-divided, and that of Naples occupied the two extremities, while the church and Tuſcan ſtates held the centre. In more modern times, the moſt diſtinct diviſion has been the kingdom of Naples in the ſouth: but the centre, and the north, have paſſed into various ſub-diviſions and denominations. For which reaſons, and the preſent uncertain ſtate of the country, the northern and middle parts ſhall be conſidered rather geographically than politically; the chief mouth of the Po being aſſumed for the limit on the E. thence following that river till it is joined by the Panaro, (the ancient Scultenna,) up to its ſource near Caſtiglione; and thence in a weſterly line to the gulph of Spetia, thus tracing nearly the boundary between the former ſtates of the Church and thoſe of Modena, while the gulph of Spetia, (Portus Lunenſis,) almoſt the eaſtern reach of the Genoeſe territory, preſents a natural and remarkable boundary in the weſt. Theſe diviſions ſhall be briefly conſidered in the ſucceeding chapters, while this is dedicated to the general deſcription of Italy.

The boundaries of this renowned country are deeply impreſſed by the hand of nature, in the Adriatic and Mediterranean ſeas, and the grand barrier of the Alps, which divide it from France, Swiſſerland,

Extent. and Germany. The length of Italy from mount Roſa, the higheſt ſummit of the Italian Alps, to the Cape de Leuca, is about 670 Britiſh miles; while the medial breadth between the Adriatic and Mediterranean is about 100; but from the Adige, the recent limit of Auſtrian power, to the eaſtern frontiers of the new French departments of Liman, and Mont Blanc (formerly Savoy), the breadth is about 200 miles.

Original Population. The original population of the ſouth conſiſted of Pelaſgi from the Peloponneſus: the northern part of Illyrians, who were ſucceeded by German Gauls; and the Etruſcans of the centre are ſaid to have been of Lydian extract. The Romans ſeem to derive their origin from the early Greek colonies; and their language was regarded as an Æolic dialect of the Greek: but as they proceeded from the moſt barbarous part of Greece at an early epoch, it was a conſiderable time before their manners, rendered ferocious by inceſſant wars, aſſumed a tint of

Grecian civilization. The ſucceſſive population, progreſſive geography, hiſtorical epochs, and antiquities of Italy are familiar to every reader, but will occaſionally be briefly commemorated in the ſucceeding chapters. It is almoſt ſuperfluous to add that the religion is the Roman Catholic. The preſent population of Italy, with the iſlands of Sicily, and Sardinia, cannot be eſtimated at more than 13,000,000.[1] The kingdom of Naples and Sicily contains about 6,000,000: the central part about 3,000,000; and the northern about four. The manners, cuſtoms, and dialects are various and diſcordant, though the general language be the Italian, eſteemed the pureſt in Tuſcany, while the enunciation is moſt perfect at Rome.

Original Population.

Population.

Italy preſents ſuch a variety of ſcenery, decorated with ſuch noble architecture, and venerable remains of ancient art, amidſt a climate generally ſerene, though liable to violent rains, and ſuch delicious tints of aerial perſpective, that the painter of landſcape is enraptured, and can render but feeble juſtice to the pictureſque features and glowing hues of nature. In the north the ſublime ſcenery of the Alps is contraſted with the fertile plains, through which many claſſical ſtreams flow into the Po. In the centre there are many marſhes and ſtanding waters, which occaſion what is called the *mal aria*, or a pernicious diſtemperature of the air; but the varied ridge of the Apennines and the beautiful proſpects of Florence and Tivoli excite univerſal admiration. A great part of the kingdom of Naples is mountainous; but the country generally beautiful; yet in addition to the fiery eruptions of Veſuvius and Etna, it is expoſed to the terrible effects of frequent earthquakes; and the enervating ſirocco.*

Face of the Country.

Italy is interſected with rivers in almoſt every direction, of which the Po is by far the moſt large and extenſive. This noble river, celebrated from the early ages of Grecian mythology, and called by the ancients Padus and Eridanus, riſes from mount Veſula, or Viſo, on the very confines of France and Italy, nearly in the parallel of mount

Rivers.

Po.

[1] Boetticher.

* Any pernicious wind is in Italy called *ſirocco*, in the ſouth applied to the hot blaſts from Africa, in the north to the bleak winds from the Alps.

Rivers. Dauphin, in Dauphiné, and Saluzzo, in Piedmont, being almoſt central between them, at the diſtance of about eighteen Engliſh miles from each. Thus deſcending from the centre of the weſtern Alps, the Po paſſes to the N. E. of Saluzzo, by Carignan, to Turin; receiving even in this ſhort ſpace many rivers, as the Varrita, Maira, and Grana from the ſouth; and from the N. the Felice, Sagon, and others. Moſt of theſe ſtreams having had a longer courſe than what is called that of the Po, the Maira, for inſtance, might perhaps be more juſtly regarded as the principal river: nay the Tanaro, which flows into the Po ſome miles below Alexandria, might perhaps claim, in the river Stura, a more remote ſource than the Po itſelf. After leaving the walls of Turin, the Po receives innumerable rivers and rivulets from the Alps in the N. and the Apennines in the S. Among the former may be named the Doria, the Teſino, the Adda, the Oglio, the Mincio: to the eaſt of which the Adige, an independent ſtream, deſcends from the Alps of Tyrol, and refuſing to blend his waters with the Po purſues his courſe to the gulph of Venice. From the ſouth the Po firſt receives the copious Alpine river Tanaro, itſelf ſwelled by the Belba, Bormida, and other ſtreams: the other ſouthern rivers are of far leſs conſequence, but among them may be named the Trebbia, the river of Parma, and the Panaro, which joins the Po at Stellato, on the weſtern frontier of the former territory of Ferrara. The courſe of the Po may be comparatively eſtimated at about 300 Britiſh miles; ſo that when Buſching pronounces it the ſecond river in Europe, after the Danube, he muſt have forgotten the Rhine, the Elbe, the Oder, the Viſtula, not to mention the Loire of France, the Tajo of Spain, and other noble ſtreams! The numerous tributary rivers, from the Alps and Apennines, bring down ſo much ſand and gravel that the bed of the Po has in modern times been conſiderably raiſed, ſo that in many places banks of thirty feet in height are neceſſary to preſerve the country from inundation. Hence hydraulics have been much ſtudied in the north of Italy; and the numerous canals of irrigation delight and inſtruct the traveller. Perhaps by deepening the chief eſtuary, and bed of the river, equal ſervice might have been rendered to commerce. In the middle ages maritime

maritime combats took place on the Po, between Venice and ſome of the inland powers. It is remarkable that, from Cremona to the ſea, there is no capital city founded on the main ſtream of the Po; and the caſe was the ſame in ancient times; an exception to the ſuppoſition that every river has ſome grand city near its eſtuary.* Rivers.

The other rivers of the north of Italy, as the Adige, the Brenta, the Piavi, and the Tagliamento, muſt now rather be regarded as Auſtrian ſtreams.

In the centre firſt appears the Arno, which riſes in the Apennines, and flows by Florence and Piſa into the gulph of Genoa. The Tiber, an immortal ſtream, is by far the moſt conſiderable in the middle, or ſouth of Italy, riſing near the ſource of the Arno, S. E. of St. Marino, and paſſing by Perugia, and Rome, to the Mediterranean, which it joins after a courſe of about 150 Britiſh miles. The Tiber is ſaid to receive about forty-two rivers, or torrents, many of them celebrated in Roman hiſtory; as is the Rubicon, a diminutive ſtream, now the Fiumeſino, which enters the Adriatic about eight Britiſh miles to the N. of Rimini. In this central part of Italy many ſmall ſtreams flow from the Apennines both to the Mediterranean and Adriatic; but after the Tiber no river can be mentioned in this, or the ſouthern diviſion, whoſe courſe deſerves the notice of general geography. Arno. Tiber.

Italy contains many beautiful lakes, particularly in the northern diviſion. The Lago Maggiore, Greater Lake, or lake of Locarno, is about twenty-ſeven Britiſh miles in length, by three of medial breadth; and the ſhores abound with Alpine beauties, receiving the waters of ſome other lakes, among which muſt be mentioned that of Lugano on the eaſt. This lake formerly adjoined to the Milaneſe territory, and contains the beautiful Boromean iſles, celebrated by many travellers. Still further to the eaſt is the lake of Como, which is joined by that of Lecco: the lake of Como is about thirty-two Britiſh miles in length, but the medial breadth not above two and a half. Yet further to the eaſt is the ſmall lake of Iſeo, which is followed by the noble Lago di Lakes. Locarno.

* To the N. of Ferrara the Po ſeems as broad as the Rhine at Duſſeldorf, Stolberg, ii. 576; but is probably not above half as deep. Dr. Smith, ii. 360, compares the Po, near Ferrara, to the Maeſe at Rotterdam, and ſays it is nearly as wide.

Garda,

Lakes. Garda, an expanſe of about thirty Britiſh miles in length by eight in breadth.

In the central part of Italy the largeſt lakes are thoſe of Perugia and Bolſena, with thoſe to the north of Rieti. Some ſmall lakes are alſo celebrated, as that of Albano, ſhaded by trees and rocks, and that of Nemi in the ſame vicinity, about ſeventeen miles S. E. from Rome. In the Neapolitan part is the lake of Celano in the north; and that of Varano, near mount Gargano: nor is there any large lake in the ſouthern part, or in the iſland of Sicily, in which laſt that of Beverio, near Lentini, is the moſt remarkable.

Mountains. The moſt important mountains of Italy are the Alps, already in a great meaſure deſcribed, under the article of Swiſſerland. The mari-

Alps. time Alps riſe from the ſea to the weſt of Oneglia, and are ſucceeded by other denominations, extending due north to mont Blanc, the ancient boundary of Savoy, and now a French mountain.* The moſt remarkable paſſage through the maritime Alps is the Col de Tende. Few ſummits in this weſtern chain have received particular denominations: the chief are mount Viſo, which gives ſource to the Po; and mount Cenis a noted paſſage to Turin. Other names are mount Genevre, mount Iſeran, Roch Michel,† &c. In general the weſtern Alps riſe, in ſucceſſive elevation, from the ſea to mount Blanc. Sauſſure has explained, with his uſual ability, the compoſition of this chain of the Alps.[2] The calcareous mountains near Geneva, are followed by granitic mixtures of mica and quartz, with argillaceous ſchiſtus, and ſerpentine. From mount Blanc the grand chain of the Italian Alps bends N. E., preſenting the high ſummits of the great St. Bernard, and mount Maudit, Combin, Cervin, and mount Roſa, the laſt nearly approaching mount Blanc itſelf in height. In his laſt volume Sauſſure

* The country of Nice has alſo been ſeized by the French, and ſtyled the department of the maritime Alps; the higheſt chain of theſe Alps, through which is the Col de Tende, forming the exterior boundary of the country of Nice.

† Keyſler, i. 202. idly aſſerts that the Roche Melon, near mont Cenis, is ſuppoſed to be the higheſt of the Italian Alps. It is 11,977 Engliſh feet above the ſea; while Little mont Cenis is 9956. Smith, iii. 138. Mount Roſa exceeds 15,500. Mont Blanc by Sir G. Shuckborough 15,662; by De Luc 15,304.

[2] Voyage, tome v.

has

has given ample details concerning this vaſt mountain, which has remained unnoted in the maps, while a fictitious mount Moro has ſupplied its place. Mount Roſa forms as it were a circus of gigantic peaks, ſurrounding the village of Macugnaga, a ſingularity of form ſtrongly contraſting with mount Blanc, and ſuppoſed to impart the name from ſome reſemblance to an expanded roſe.[3] While mount Blanc, and the adjacent high ſummits, are compoſed of vertical ſtrata, the moſt elevated peaks of mount Roſa are horizontal, or not inclined more than 30°. The ſtructure is equally different; for while mount Blanc conſiſts of vaſt maſſes of granite, mount Roſa is chiefly of gneiſs, or ſchiſtoſe granite, and other flaty rocks. So various are the great operations of nature, where theory would expect ſimilarity. Mountains.

From mount Roſa this grand chain continues its progreſs N. E. by Simplon, &c. through the country of the Griſons to the glaciers of Tyrol, terminating in the Salzian Alps. This chief chain, paſſing through the centre of Tyrol, ought indeed to form the boundary between Germany and Italy; for the Italian Alps, to the north of the former Milaneſe and Venetian territories, are of comparatively ſmall elevation. Mount Baldo on the eaſt of the lake di Garda, deſerves to be mentioned, only on account of its botanical wealth, and literary celebrity; the higheſt by far of the Italian Alps belonging to the country of Piedmont.

The next grand chain of Italian mountains is that of the Apennines. While the weſtern Alps branch off on one ſide into the mountains of Dauphiné,* on the other the Apennines are at firſt a branch of the Alps, which ſeparates the plains of Piedmont from the ſea.[4] Thus the Apennines begin near Ormea, in that high ridge which now forms the boundary of the French department of the maritime Alps, and ſtretch without any interruption along both ſides of the gulph of Genoa, at no great diſtance from the ſea, giving ſource to many rivers flowing to Apennines.

[3] Sauſſure, viii. 54.

* Some would extend this chain to the Pyrenees; but a great and accurate obſerver remarks that it is entirely interrupted by the wide plains of lower Provence, and Languedoc. Sauſſure, v. 222.

[4] Sauſſure, v. 221.

the

Mountains. the north and to the eaſt. In the ſouth of the former territory of Modena, after giving riſe to the Panaro, and Reno, they proceed almoſt due eaſt to the centre of Italy, where they afford ſources to the Arno, and the Tiber, and thence paſs S. E. to the extremities of Italy, generally approaching nearer to the Adriatic than to the Mediterranean. The noted mount Gargano is, as it were, a ſpur of the Apennines to the north of the gulph of Manfredonia. In general the Apennines may rather be regarded as hills than as mountains. Ferber[5] found them to conſiſt, to the S. of Bologna, of ſtratified grey hard limeſtone, with a few petrifactions. Yet in the Genoeſe territory, and Tuſcany appear not only the beautiful marble of Carrara, but rich ſerpentine, here called Gabbro, with ſteatite and aſbeſtos. What is called granitone is alſo found, conſiſting of white felſpar and green mica.[6] The territory of Sienna preſents ſome granitic hills, with ſlate, ſerpentine, and the noted yellow marble with black veins, found at Montarenti, and many metallic ores; this diſtrict being after Piedmont, perhaps the richeſt mineral region in Italy; but the hills ſeem rather diſtinct than connected with the Apennine ridge, from which they are divided by the Chiano, and the Tiber, the moſt noted of the Sienneſe hills being Monte Pulciano.

Volcanoes. Having thus briefly conſidered the chief ridges of Italian mountains, thoſe ſublime features of the country the volcanoes muſt not be omitted. They only occur in the ſouthern diviſion, and have recently received ſcientific illuſtration from the able and accurate pen of Spallanzani.

Veſuvius. Veſuvius is a conic detached mountain, about 3,600 feet high, but ſeems chiefly calcareous, like the Apennines, as it frequently ejects marble, calcareous ſpar, gypſum, and ſimilar ſubſtances.[7] The lava, as uſual, is generally with a baſis of Hornblende; a ſubſtance which conſiſts in a great degree of iron, is liable to eaſy fuſion with ſulphur; and it is ſometimes mingled with felſpar, quartz, or granite, ſeemingly ejected from great depths. The terrors of an eruption, the ſubterranean thunders, the thickening ſmoke, the ruddy flames, the ſtony ſhowers ejected to a prodigious height, amidſt the corruſcations of

[5] Italy, 76. [6] Ib. 250. [7] Ferber, 139.

native lightning, the throes of the mountain, the eruption of the lava, descending in a horrid and copious stream of destruction, have exercised the powers of many writers, but far exceed the utmost energy of description. VOLCANOES.

Yet Vesuvius, placed by the side of Etna, would seem a small ejected hill, the whole circuit of its base not exceeding 30 miles, while Etna covers a space of 180, and its height above the sea is computed at about 11,000 feet.[8] This enormous mass is surrounded by smaller mountains, some of which equal Vesuvius in size; and while the lava of the latter may devolve its stream for seven miles, Etna will emit a liquid fire thirty miles in length. The crater of Vesuvius never exceeds half a mile in circumference, while that of Etna is commonly three, and sometimes six miles. Spallanzani has minutely described the crater of Etna, which many travellers have pretended to visit. It was an oval, extending from E. to W. enclosed by vast fragments of lava and scoriæ; the inner sides being of various declinations, incrusted with orange coloured concretions of muriat of ammoniac. The bottom was a plain nearly horizontal, about two thirds of a mile in circumference, with a large circular aperture, giving vent to a column of white smoke, at the bottom of which was visible a liquid fiery matter, like metal, boiling in a furnace. Such is the height of Etna that the eruptions rarely attain the summit, but more usually break out at the sides. Near the crater begins the region of perpetual snow and ice; which is followed by the woody region;* vast forests of oaks, beeches, firs, and pines, while the upper is almost destitute of vegetation. In this middle region also appear chesnut trees of enormous size; one in particular distinguished by the name *di Cento Cavalli*, the circumference of which has been found to be 204 feet, an amazing phenomenon of vegetation. Dolomieu has published a minute catalogue of all the mine- Etna

[8] Spallanzani, i. 155.

* The ruined turret call'd the Tower of the Philosopher is well conjectured by M. de Non, p. 67, to have been erected on occasion of the emperor Hadrian's visit to Etna.

Mr. Kirwan, Geog. Eff. 168, says that the lavas of Etna are usually porphyritic, whence he argues that the basis is porphyry. But these lavas (Dolomieu, 212) are of hornblende, with crystals of felspar, so that it would be more just to infer that the basis is iron ore.

Volcanoes. ral products of Etna; the lavas being mostly with a basis of hornblende, while many others are of petrosilex, or the keralite of the French: the ejected stones are granitic, or calcareous. Dolomieu asserts that Etna may be said to be surrounded with columns of basalt, which he calls prismatic lava; but Spallanzani[9] observes that he has carefully examined the shore, which is volcanic for near 23 miles, "one third of it beginning at Catania, and proceeding to Castello di Jaci, consists of prismms more or less characterized, and such as they have been described by M. Dolomieu; but the other two thirds, though equally composed of lavas with the former, and for the most part falling perpendicularly into the sea, have no such figure; and only present here and there irregular fissures, and angular pieces, such as are generally observable in all lavas, which separate more or less on their congelation."*

Stromboli. The islands of Lipari, to the north of Sicily, also contain many volcanoes, of which Stromboli is the chief. This crater is distinguished from any other by constant momentary eruptions of showers of stones, which, from its position in the side of the hill, are confined, and relapse into the volcano, thus supplying endless materials.[10] The isle called Vulcano presents a most capacious crater; but the materials of eruption seem exhausted. The lava has a base of petrosilex; and Spallanzani here found small prisms of basalt, about a foot in length.[11] The isle of Lipari, containing the town so called, presents vast rocks of volcanic glass; and the hill called Campo Bianco, three miles from the town of Lipari, contains almost all the pumices which are employed for various purposes in Europe. Felicuda, and Alicuda, the two extreme Liparian islands towards the west, also display proofs of their having anciently contained volcanoes: and recent authors have

[9] iii. 204.

* Spallanzani is of opinion that basalt is sometimes formed by fire, and sometimes by water. Other substances also assume the prismatic form, as the columns of red jasper near Dunbar, in Scotland. Some ores of iron also affect it; and the other substances are strongly impregnated with that metal, which seems the real and radical cause of that crystallization.

[10] Spallanzani, ii. 52. [11] Ib. ii. 260—5, &c.

discovered

diſcovered ſimilar proofs in the iſle of Iſchia, and in thoſe of * Ponza, to the north of the gulph of Naples; while that of Capri, to the S. of that gulph, is ſuppoſed to be chiefly calcareous. VOLCANOES.

There are ſtill ſome remains of foreſts in ſome parts of the Apennines; but the early civiliſation of Italy ſeems to have been diſadvantageous to the growth of timber. The woods of mount Gargano are celebrated by the ancient claſſics, and the foreſts of Etna appear to be extenſive. Forests.

It is probable that the botanic treaſures of Italy are at leaſt equal to thoſe of any other European country on account of the great variety of its ſoil, the irregularity of its ſurface, and the genial benignity of its climate: excepting however Piedmont, which has been ably ſurveyed by Allioni, the reſt of this fine country, eſpecially its ſouthern provinces, has by no means received that degree of notice which it merits: the vale of Enna, the foreſts of Apulia, the romantic ſcenes of Calabria, and the warm ſhore of the Tarentine bay contain a rich harveſt for future naturaliſts, and will no doubt grace the flora of Italy with many new ſpecies. Botany.

The alpine barrier of the north of Italy, and the long range of the Apennines preſent a number of plants, inhabitants of the higheſt mountains, which have already been enumerated in the botany of Swiſſerland, ſuch are rhododendron ferrugineum, azalea procumbens, bartſia alpina, pedicularis incarnata, ſoldanella alpina, androſace maxima, carnea, and villoſa, primula vitaliana, auricula, and hirſuta, gentiana nivalis, atragene alpina, draba aizoides, and pyrennaica, campanula ceniſia, and papaver alpinum.

The weſtern coaſt has been perhaps the beſt explored, and has in conſequence been found to be profuſe of beauties: the ſtately *tree-heath*, erica arborea, with the two elegant ſhrubby euphorbias, e. dendroides, and ſpinoſa, the evergreen arbutus unedo, and the *tamariſk*, tamarix gallica, mantle over the ſummits of the cliffs, or bend midway, from them towards the ſea: the dryer rocks, and of a more ſcanty

* See Dolomieu ſur les iſles Ponces, et catalogue raiſonné des produits de l'Etna. Paris 1788. 8vo.

Botany. ſoil, are crowned with the *great aloe*, agave americana, while their ſides are adorned with the *Indian fig*, cactus opuntia. The ſtony beach, and the ſandy receſſes of the bays delight the eye with the ſnowy bloſſoms of the *caper buſh*, capparis ſpinoſa, and the glow of the *amethyſtine eryngo*, with the *lavender*, lavandula ſpica, and ſtæchas, the *roſemary*, roſmarinus officinalis; the glaucous foliage of the ſtrong ſcented *rue*, the *tree ſouthern-wood*, artemiſia arboreſcens, the hyacinthus ſeratinus, anthyllis barba-Jovis, plumbago europæa, dianthus carthuſianorum, ambroſia maritima, lavatera arborea, clypeola maritima, and pancratium maritimum.

The ſides of the ſtreams are bordered by the ſpiræa hypericifolia, the *oleander*, the *myrtle*, the *Cornelian cherry*, cornus maſcula, and the *Spaniſh reed*, arundo donax, whoſe tall jointed ſtem, and long ſimple leaves almoſt emulate the bamboo of India.

The dry heathy tracts of the interior of the country are covered with erica ſcoparia, and carnea, ruta montana, ciſtus laurifolius, and ladaniferus. Rhus coriaria, *ſumach*; roſa cinnamomea, *cinnamon roſe*; ſalvia officinalis, and æthiopis, *ſage*; meliſſa cretica, convolvulus cneorum, catananche cærulea, and paſſerina hirſuta.

Among the trees, beſides the common ones of Britain, we find the *olive*, the *date plumb*, dioſpyros lotos, the *ſtorax tree*, ſtyrax officinalis. Melia azedarach, the *bead tree*, the *almond*, the *pomegranate*, the *azarole plum*, the *pyracantha*, the *carob tree*, ceratonia ſiliqua, the ilex, the *piſtachia*, the *manna-tree*, fraxinus ornus, the *cypreſs*, the *date palm*, the *lemon*, the *orange*, the *fig*, and the *vine*.

Of the flowering ſhrubs, and lower trees, the principal are the *lilac*, ſyringa vulgaris; the *jaſmine*, and *yellow jaſmine*, the *ſyringa*, Philadelphus coronarius, the *laburnum*, and cytiſus argenteus; the *Spaniſh broom*, the *Judas tree*, cercis ſiliquaſtrum, the *bean trefoil*, anagyris fetida, the *provence roſe*, roſa gallica, the *lauruſtinus*, the *bay*, the *laurel*, and globularia alypum.

The ſublime ruins of ancient art, and the inſulated rocks that often ſerve them for a baſe, afford a favourite ſituation for the *red valerian*, valeriana rubra, antirrhinum cymbalaria, majus, and orontium, cneorum tricoccum, cotyledon umbilicus-veneris, and coronilla glauca.

In the ſouthern parts *cotton*, *rice*, and the *ſugar cane* indicate the fertility of the ſoil, and the warmth of the climate; and the fields, and paſtures, as far as they have been examined, bear a ſtriking reſemblance in their native products to thoſe which have been already mentioned, as enlivening the ſouthern provinces of Spain. Botany.

The Italian horſes are of little reputation. The cows of the Lodizan, where the noted cheeſe is now made, which was formerly produced near Parma, are deſcribed by Mr. Young as generally of a blood red colour, long, lank, and ill made.[12] The ſame writer obſerves that though in Tuſcany the number of cattle be far inferior to what might be expected, yet the art of fattening oxen is well underſtood. The buffalo is in Europe almoſt peculiar to Italy; an animal, though tame, of ferocious aſpect, and as different from the bull, as the aſs is from the horſe. In manners he ſomewhat reſembles the hog, being fond of wallowing in mud, his fleſh is coarſe, and his hide, though light, is ſo firm as to have ſupplied the buff coats, or armour of the ſeventeenth century. Originally it is ſuppoſed from Africa, he is little adapted to any cold climate. The marmot, and the ibex are alſo reckoned among the animals of the Apennines; and the creſted porcupine is eſteemed peculiar to the ſouth of Italy. Among birds may be mentioned the little falcon of Malta, the certhia muraria, and the turdus roſeus, and cyanus, with the alauda ſpinoletta, and other ſorts of land and water fowl. Of reptiles the lacerta orbicularis is eſteemed peculiar to the kingdom of Naples. The remaining topics are treated under each diviſion. Zoology.

[12] France, ii 191.

CHAPTER II.

The Southern Part of Italy.

Naples and Sicily, with the adjacent Iſles.

Naples and Sicily.

THIS diviſion compriſes the kingdom of Naples and Sicily; being divided from the central part chiefly by an arbitrary line; nor has nature indeed marked any preciſe diſtinction, except ſome rivers were aſſumed as boundaries, towards the Mediterranean and Adriatic. Sicily is about 170 Britiſh miles in length, by 70 of medial breadth: while this part of Italy exceeds 300 miles in length by 100 in breadth. Square miles 29,824, with ſix millions of inhabitants.

After the fall of the Roman empire this part of Italy underwent various revolutions. The powerful princes of Benevento ſurvived the conqueſt of the north of Italy by Charlemagne; and with other potentates in this quarter acknowledged the ſupremacy of the Greek empire, from which Sicily had been wreſted A. D. 828 by the Saracens, who poſſeſſed it till A. D. 1058.* A pilgrimage to St. Michael of mount Gargano induced the Normans to attempt the conqueſt, which was gradually accompliſhed, both Saracens and Greeks being expelled.

Hiſtorical Epochs.

The Norman leaders became dukes of Apulia, Calabria, and Sicily: and Roger was named king of Sicily by the Pope, A. D. 1130. The Norman line continued till their kingdom was ſubdued by Henry VI, emperor of Germany. After internal conteſts Charles of Anjou became king of Sicily 1266: after the Sicilian veſpers, 1282, Sicily was ſeized

* Sardinia was ſubdued about the ſame time, and was regained by the Piſans and Genoeſe in the year 1016.

To enumerate the antiquities of the Sicilian kingdom would be infinite, as beſides thoſe of Herculaneum, there are innumerable remains of Grecian architecture in the S. of Italy, and in Sicily, particularly the grand temple near Girgenti.

by

by a fleet ſent by the kings of Arragon, but Naples continued to acknowledge the line of Anjou, which expired in the infamous Jean 1382. René of Anjou, king of Naples 1435, was the father of Margaret wife of Henry VI of England: but the French line failed in 1481, in Charles Count de Maine, who named Louis XI king of France his heir, whence the pretenſion of France to the kingdom of Naples. The Spaniſh line of Naples and Sicily continued till 1714, when they paſſed to the houſe of Auſtria; but were transferred to that of Bourbon 1736, in the perſon of Don Carlos duke of Parma and Placentia, ſon of Philip V king of Spain, and of Elizabeth of Parma: who ſucceeding to the crown of Spain 1759, he conferred his Italian kingdom on Don Ferdinand his third ſon, who married the ſiſter of the emperor of Germany in 1768. NAPLES AND SICILY.

Though the religion be the Roman Catholic, the inquiſition has been carefully excluded. Few men of diſtinguiſhed genius have recently appeared in this portion of Italy, which is overrun with prieſts and lawyers: but among the latter Giannone has diſtinguiſhed himſelf by his ſpirited hiſtory of his country. There are no leſs than 20 archbiſhopricks, and 125 epiſcopal ſees; but no univerſity of any reputation. The eccleſiaſtics are computed at 200,000; and it is ſuppoſed that about one half of the lands is in their poſſeſſion. The government is nearly deſpotic. The laws are contained in the Codex Carolinus publiſhed in 1754. The political importance is inconſiderable: but the French have never without great loſs penetrated far into Italy, and it is probable that experience will teach them to abſtain in future. The chief city is Naples, eſteemed, after Conſtantinople, the moſt beautiful capital in the world: the inhabitants are computed at 380,000.* Palermo in Sicily is ſuppoſed to contain 130,000. Meſſina was nearly deſtroyed by an earthquake, 1783; but Bari is ſaid to contain 30,000 ſouls, and Catanea 26,000. Beſides excellent wines, oranges, olives, rice, and flax, this kingdom abounds in cattle; and ſome parts are cele- Religion.

* Amalfi, about 30 miles S. E. of Naples, was formerly a celebrated city and ſea port, remarkable for the ſuppoſed invention of the mariner's compaſs, and for the diſcovery of the pandects of Juſtinian, A. D. 1137.

Naples and Sicily.

brated for the produce of manna and saffron.* The manufactures, particularly those of silk and woollen, date from the reign of Ferdinand I of Arragon; and these, with the native products, constitute the chief articles of trade. Sicily is thought to be the native country of the sugar cane, indigenous however in the East and West Indies. The papyrus is also found in Sicily, perhaps transferred from Egypt. The mines are few and inconsiderable, as may be expected in a volcanic country: the chief are near Fiume di Nisi in Sicily, where there are mines of antimony; and specimens are found of gold, lead, silver, and copper.[1] Iron manufactures have been recently instituted near Naples, but the mines and the agriculture are alike neglected; and Sicily, anciently so fertile in grain, is now of little account. The revenue is computed at 1,400,000l. sterling; and the army at 40,000. There are about four ships of the line, and four frigates. The mountains have been already mentioned in the general description of Italy, consisting chiefly of the Apennines which branch out through Apulia to Otranto, and through Calabria to Cape Spartivento.† The rivers are inconsiderable, being chiefly the Garigliano, which under the name of Liri may be traced from near the lake of Celano to the gulph of Gaeta; and with the river that flows to Pescara, and that lake, might afford a natural boundary to the north, were a new division of Italy to happen. The Volturno passes by Capua, while the Sangro from an adjoining source runs to the Adriatic. The others are rather rivulets; nor can those of Sicily aspire to a higher appellation, the chief of the latter being the Himera, or Salso, running to the south. The natural curiosities of these regions are numerous and interesting, independent of the grand volcanic appearances. About six miles from Girgenti, and very remote from Etna, there is a singular volcano, which in 1777 darted forth a high column of potters' earth, of which there are continual ebullitions from about sixty small apertures.[2] The papyrus is

Mountains.

Rivers.

* The tillage is said to be excellent, Stolberg, i. 459; yet the same author observes that the southern provinces are wholly neglected.

[1] De Non, 402.

† But these branches are very low, according to Stolberg. The same author, ii. 131, gives a curious representation of the stone hovels near Trani on the northern shore of Apulia, which greatly resemble what are called the Picts' houses in Scotland.

[2] De Non, 240.

only

only found in the Nile, and in the fountain of Cyane, which flows into the river Anapus near Syracuſe. Spallanzani has explained the noted wonders of Scylla and Charybdis; the former being a lofty rock on the Calabrian ſhore, with ſome caverns at the bottom, which by the agitation of the waves emit ſounds reſembling the barking of dogs. The only danger is when the current and winds are in oppoſition, ſo that veſſels are impelled towards the rock. Charybdis is not a whirlpool, or involving vortex, but a ſpot where the waves are greatly agitated by pointed rocks, and the depth does not exceed 500 feet. The iſles of Lipari contain many natural curioſities, as the rocks of volcanic glaſs, and the ſpacious cavern in Felicuda called the Grotto of the Sea Ox, which from an aperture of 40 feet high opens into a hall near 200 feet long, 120 broad, and 65 high.[3] This cavern is in lava, and only acceſſible by ſea; and our author ſuppoſes that it was occaſioned by the action of the gaſes in the lava, when fluid; as there are examples in Etna of caverns, far more deep, produced by a ſimilar cauſe. The ſtoves or warm caves of Lipari have ſuffered by neglect. The ſmall iſles off the gulph of Gaeta alſo preſent ſingular features. While Capri, the Caprea of antiquity and ſcene of the debaucheries of Tiberius, is calcareous, and ſeems merely an elongation of the adjoining promontory; the iſle of Iſchia, to the north, abounds with volcanic ſubſtances.[4] Dolomieu has ably deſcribed the iſles of Ponza, which he obſerves are inaccurately laid down in the maps, which preſent iſles that do not exiſt and omit others. About 30 miles to the north of Iſchia, and 50 from the Italian ſhore, is Pendataria, famous for the exile of Julia the daughter of Auguſtus, now called Ventotiene, with the ſmall iſle of San Stephano to the eaſt. The three other Ponzian iſles are about 20 miles to the N. W. of theſe two. Ponza, the largeſt, is in the middle; a narrow iſle, extending from N. E. to S. W. in length about four miles. Palmarola is about four miles to the W. of Ponza, length from N. to S. about three miles, and very narrow. Zanone is about four miles to the N. E. of Ponza, in breadth and length about one mile. In

Scylla.

Charybdis.

Iſles.

Pendataria.

Ponza.

[3] Spallanzani, iii. 99.

[4] Ferber Italy, 178. See a deſcription of this iſle by Addiſon in his remarks on Italy. On the oppoſite ſhores is found that remarkable ſtone which when watered produces muſhrooms.

Naples and Sicily.

the Adriatic ſea, not far from mount Gargano, are the ſmall iſles of Tremiti, the Diomedeæ of antiquity. Sicily being an important part of the kingdom has been already conſidered. To the N. of this great iſle, and at a conſiderable diſtance from thoſe of Lipari, is the ſmall iſle of Uſtica, and at a ſtill greater diſtance from the ſouth Pantalaria. The iſles of Malta and Gozo are of far more conſequence, but have been ſo frequently deſcribed that the theme is trivial. Theſe iſles are rocky and barren, not producing grain ſufficient for half the conſumpt of a thin population; but might in the hands of the Engliſh prove a valuable acquiſition. Malta is about 50 Britiſh miles in circumference, and is ſuppoſed to contain 60,000 inhabitants. The iſle of Gozo is about half the extent, and is rather fertile, the population being computed at 3000.

CHAPTER III.

The Central Part of Italy.

Dominions of the Church.—Tuſcany.—Lucca.—St. Marino.—Piombino, and the Iſle of Elba.

THIS portion comprehends the Dominions of the Church, and the grand duchy, now kingdom, of Tuſcany; with a few diminutive ſtates, as the republics of Lucca and St. Marino, the principality of Piombino, and the ſmall portion of territory around Orbitello belonging to the kingdom of Naples.

Dominions of the Church. Extent. Progreſſive Geography.

The territory belonging to the Pope is the chief in extent, reaching from the Po to beyond Terracina, a length of more than 260 Britiſh miles: but, on 13,808 ſquare miles, contains little more than two millions of inhabitants. The ſecular power of the Popes dates from the age of Charlemagne, and the forged collection of papal reſcripts, publiſhed in the ninth century under the name of Iſidorus, led to ſucceſſive accumulations of dominion. The ſmall territory granted in the eighth century, was encreaſed by the acquiſition of Benevento in the eleventh; after which there was a pauſe: and the Popes themſelves were conſtrained to reſide at Avignon. Hence Dante and Petrarca ſatirized Rome, not becauſe it was papal, as our reformers conceived, but becauſe it was in oppoſition to the Popes. In 1513 Bologna was acquired by Julius II: the marquiſate of Ancona followed in 1532: Ferrara 1598: Urbino 1626. The pontiff is elected by the cardinals, a kind of chapter conſiſting nominally of prieſts and deacons, but in effect of opulent eccleſiaſtics, who are elevated to this dignity by their ſervices to the church, by family connexions, or by princely recommendation. The nature of the papal power is a bar to induſtry; and the Popes rarely

Dominions of the Church.

attempt to reſtore the country to its former fertility, though Pius VI made ineffectual efforts to drain the Pontine marſhes.* Almoſt the only exports from the papal ſtates are a ſuperior kind of alum, prepared from a whitiſh argillaceous rock at Tolfa near Civita Vecchia; from which place alſo puzzolana is exported, being yellowiſh brown aſhes, containing particles of iron, whence it forms a ſtrong cement, which might be imitated by mixing filings of iron with mortar.†

Rome.

Rome is ſuppoſed to contain 162,800 inhabitants: Bologna (famous for an ancient univerſity) 80,000: and Ancona 20,000. The revenue ariſing from the papal territory was computed at about 350,000l. ſterling; but by exactions in foreign countries was raiſed to about 800,000l. Yet there was a large debt, bearing eight per cent. intereſt, a ſure proof of the want of induſtry and proſperity. The papal power ſeems now to be ſupported only by the influence of Auſtria. The chief river, as already mentioned, is the Tiber, which running from N. to S. pervades ſo great a part of the centre of Italy, that this portion might be named Italia Teverina; the ſouthern Italia Volcanica; and the northern Italia Paduana, from the river Po. The rivers flowing into the Tiber are the Chiano from the weſt; and the Nera from the eaſt, which receives the Velino from the ſouth: not far to the north of Rome the Teverone joins the Tiber, more noted for beautiful caſcades near Tivoli than for the length of its courſe. The Velino diſplays a noble caſcade of about 300 feet near Terni.

Rivers.

Tuscany.

The grand duchy, now kingdom, of Tuſcany, has long been celebrated for the arts; and Florence is regarded as the Athens of modern Italy. This principality is about 120 Britiſh miles in length by 90 in breadth; but on 7,040 ſquare miles contains a population of about 1,250,000. Florence long continued a diſcordant republic, till the houſe of Medici, originally opulent merchants, obtained the ſupreme power in the beginning of the fifteenth century. That family be-

Extent.

Hiſtorical Epochs.

* Count Stolberg allows that the eaſtern provinces of Urbino, Romagna, and the march of Ancona, are in a high ſtate of cultivation and proſperity. Travels, i. 459. See alſo Dr. Smith's praiſe of the country round Loretto, ii. 310.

† Near Ancona are found large ſtones containing what are called ſea-dates, a delicate ſpecies of ſhell fiſh. Keyſler, iv. 41. They are alſo found in the ſouth of France.

coming

coming extinct, 1737, was followed by Francis duke of Lorrain, who afterwards ſucceeded the houſe of Auſtria in the imperial throne. Francis was followed by his ſon Peter Leopold, emperor in 1790; whoſe ſon Francis became grand duke, and ſucceeded his father as emperor of Germany in 1792; his brother Ferdinand being appointed grand duke of Tuſcany.* The revenue is computed at about half a million ſterling, but the forces do not exceed 6 or 8,000. Tuſcany is one of the moſt beautiful and fertile regions of Italy, with a temperate and healthy climate. It abounds in corn and cattle, and produces excellent wines and fruit. Florence contains about 80,000 inhabitants, and Livorno (corrupted by our mariners to Leghorn) 45,000: the latter, a celebrated port, has ſupplanted the maritime city of Piſa, now reduced to a population of about 20,000. The manufactures of ſilk and velvet were formerly celebrated, and ſtill maintain reputation. The mountains in the Sienneſe, or ſouthern part of Tuſcany, contain valuable ores of antimony, copper which is wrought at Maſſa, and other metals, with ſlate and yellow marble. The ſerpentine of Impruneta, ſeven miles ſouth from Florence, preſents beautiful varieties uſed in ornamental architecture.[1] The Florentine marble is remarkable for pictureſque repreſentations of ruins, &c. cauſed by the infiltration of iron between the laminæ. The Arno receives many ſmall ſtreams; and the Ombrone is a conſiderable river which pervades the Sienneſe. Tuſcany.

The ſmall republic of Lucca is ſuppoſed to contain 120,000 people, on 288 ſquare miles; of which Lucca holds about 40,000. It aſſumed independence in 1370, the preſent ariſtocratic conſtitution was ratified in 1430; but in the recent revolutions of Italy this ſtate adopted a conſtitution ſimilar to the French. The Luccaneſe are the moſt induſtrious people of Italy, and no ſpot of ground is neglected, the hills being covered with vines, olives, cheſnut, and mulberry trees, while the meadows near the coaſt nouriſh numerous cattle. Oil and ſilk are the chief ex- Lucca.

[1] Ferber, 250, &c.

* It is now a kingdom under the protection of France, aſſigned to a prince of Spain.

ports

Lucca. ports of Lucca, and their motto is LIBERTAS, a goddeſs rarely found more amiable than here.*

St Marino. The diminutive republic of St. Marino has been celebrated by many able writers. The inhabitants of the village and mountain are computed at 5000. It is ſurrounded by the dominions of the Pope, and claims his protection. A hermit of the fifth century gave name and exiſtence to this village, which grew up unmoleſted on the holy ground. In 1739 the miſerable ambition of cardinal Alberoni, being diſappointed in embroiling large ſtates, was directed againſt this ſmall republic, which he ſubjected to Rome, but the revenue being inconſiderable its ancient privileges were reſtored.

Piombino. The principality of Piombino, conſiſting of a ſmall portion of the Italian ſhore, and the oppoſite iſle of Elba, were in the thirteenth century ſubject to the Piſans; and after ſeveral revolutions paſſed to the family of Appiano, as a detached principality, in 1399. In 1501 it was ſeized by Cæſar Borgia, but after the death of pope Alexander VI, returned to the houſe of Appiano. In the ſixteenth century the iſle of Elba was repeatedly ravaged by the Turks. The principality recently paſſed to the houſe of Buoncompagni, that is the dukes of Sora, a Neapolitan family which owes its fortune to the pontiff Gregory XII. Piombino is a ſmall neglected town, the princes having generally reſided at Rome.

Isle of Elba. The iſle of Elba, the ancient Ilva, is about nine miles in length, and three in breadth; and has been remarkable from early antiquity for its metallic productions, particularly beautiful ores of iron, often cryſtallized, and mingled with native Pruſſian blue. The chief iron mine is that of Rio, in the weſtern part of the iſle; but as there is

* Another ſmall commercial republic, though ſituated on the eaſtern ſhore of the Adriatic, is often conſidered as an Italian ſtate. Raguſa has a population of about 56,000, on 352 ſquare miles. This ſtate being adjacent to the territory formerly belonging to the Venetians in Dalmatia, imitated the Venetian ariſtocracy, and was protected by the Turks on condition of paying tribute. The religion is the Catholic and the ſpeech the Slavonic, but moſt of the inhabitants ſpeak Italian. It is an archbiſhoprick, with ſix ſuffragans, and its commerce is conſiderable, as it ſupplies the Turks with ſeveral kinds of merchandize and ammunition. Raguſa is an ancient city, being the Rauſium of the Romans, and in the tenth century had become a metropolis of Dalmatia. In the thirteenth century it was conquered by the Venetians, and afterwards ſubject for a time to the crown of Hungary. The hiſtory of Raguſa may be traced in that of Venice, and its manufactures are ſtill of diſtinguiſhed beauty. Lucii Dalmat 49, &c. Buſching, iii. 259.

no water it is wrought near Piombino. This remarkable iſle is alſo ſaid to contain copper, lead, and even tin. Magnet, by the Italians ſtyled calamita, is alſo found in great perfection; but what is ſtyled white calamita ſeems to be a different ſubſtance. The coaſt of Campo contains granite, which according to Ferber is of a violet colour. Aſbeſtos and amianthus are alſo among the productions of Elba. Ferber, himſelf a Swede, ſays that the iron ore of Elba is equal to that of Sweden. This iſle produces excellent wine, ſome oil, and flax; but cannot boaſt of much fertility in grain.[a] Isle of Elba.

[a] Buſching, xiii. 125. Ferber's Italy, 294. Tozzetti, in his travels through Tuſcany, ſuppoſes Elba to have furniſhed moſt of the granite uſed by the Romans.

CHAPTER IV.

The Northern Part of Italy.

Piedmont.—Milan.—Mantua.—Parma and Placentia.—Modena.—Genoa.

THIS largeſt diviſion formerly compriſed the extenſive territories ſubject to Venice, and the king of Sardinia, with Milan and Mantua appanages of the houſe of Auſtria, the principalities of Parma and Modena, and the long mountainous ſtrip belonging to the Genoeſe. But the greater part of the Venetian poſſeſſions to the river Adige has become ſubject to Auſtria, and France has ſeized on Savoy with the
Extent. county of Nice, and ſmall principality of Monaco. This part of Italy therefore is now about 200 miles in length, from the Adige to mont Blanc, and about 120 in breadth, from the gulph of Genoa to the Swiſs frontier. This fertile region is by the French conſtituted a republic, under the name of Ciſalpine, an erroneous application of the ancient name Ciſalpine Gaul; as on the contrary the proper appellation, derived, with the projected government, from France, ought to have been the Tranſalpine, or the Paduan republic, as the country is pervaded and fertilized by the Po.*

Piedmont. The moſt extenſive province of this diviſion is Piedmont, ſtill about 150 Engliſh miles in length by 100 of medial breadth. This principality was part of the ancient kingdom of Lombardy, and formed a part of the gradual acquiſitions of the counts afterwards dukes of Savoy, and latterly kings of Sardinia. While the revenue of Sardinia was eſtimated at 1,085,000l., Piedmont contributed 953,750l., Savoy 87,500l., and Sardinia only 43,750l. This delightful province enjoys a mild and pure

* Piedmont is excluded from this new republic; which on the other hand embraced the papal territories of Ferrara, Bologna, and Romagna. The reſt of Italy was once the Roman and Neapolitan republics.

air, and diſtinguiſhed fertility of ſoil, the plains producing wheat, maize, rice, with ſome olives and wine, and the paſturages abound with cattle. Mr. Young ſays in general that the ſoil is a rich ſandy loam, with ſome tracts of large gravel brought down from the rivers; but the heat is exceſſive in ſummer, and the winter cold very ſevere. Keyſler mentions the fogs of autumn and winter, riſing from the Po and other waters. Around Turin and through a great part of the province, artificial irrigation, or the watering of meadows, is practiſed with great aſſiduity and ſucceſs. The ſurrounding Alps are rich in minerals.[1] The Alpine chain, from St. Gothard to Mount Cenis, is of prodigious height, particularly Mount Roſa, a northern boundary of Piedmont, and ſuppoſed to be the ancient Mons Sylvius; but from Mount Cenis it becomes gradually lower, till the Apennines branch out between Roja and Livenza, encloſing this province on the ſouth. Thus numerous ſtreams deſcend on all hands to fertilize the plains, and the river Orco forms at Cereſoli a vertical caſcade, computed at 400 fathoms or 2,400 feet. The torrent Evenſon, deſcending from Mount Roſa, forms about half a mile from Verrez, a fall of more than 200 fathoms. The copper mines in the duchy of Aoſta are numerous; and in ſome places this metal is accompanied with antimony, arſenic, and zinc. In the ſuperior regions near Macugnaga there are mines of gold, found in marcaſite and quartz: in the vale of Seſia are the gold mines of St. Maria, and Cavavecchia, alſo containing ſilver. Gold is likewiſe found in mountains of Challand near the vale of Aoſta; and the torrent Evenſon rolls down pebbles of quartz, veined with that precious metal. Not far to the eaſt of Mount Blanc, a rich vein of cobalt has been recently diſcovered; and plumbago or black lead has been obſerved near the baths of Binay. But it would be infinite to detail the mineralogic opulence of Piedmont, which ſpreading to the ſouth of the higheſt Alps, almoſt rivals the ſouthern ſide of the Carpathians in Hungary. PIEDMONT.

The chief city of Piedmont is Turin, ſuppoſed to contain more than 80,000 inhabitants, with an univerſity founded in 1405 by Amadeo duke of Savoy, this city having been ſubject to the family ſince A. D.

[1] See Memoire de M. Robilant ſur la mineralogie de Piémont. Journ des Mines, No. 50.

Piedmont. 1097. Vercelli is ſaid to contain 20,000; and Aleſſandria 12,000: a little to the eaſt of the latter is Marengo, noted for a victory of Bonaparte over the Auſtrians. The king of Sardinia uſed to maintain an army of about 40,000. The chief exports conſiſt of ſilk, which was chiefly manufactured at Lyons, ſome hemp, and large flocks of cattle.*

Milan. Next in poſition, and now in conſequence, is the fertile duchy of Milan, ſaid to contain, on 2,432 ſquare miles, a population of 1,116,850. The city of Milan was founded by the Gauls about 584 years before the Chriſtian era; and the inhabitants are computed at about 120,000. After the fall of the kingdom of Lombardy, it became ſubject to the emperors of the weſt; but impatient of the yoke, it was ſeverely puniſhed by the emperor Frederic I. 1162; who taking it after a ſiege of ſeven months deſtroyed the gates, ramparts, and edifices, except a few churches, and ſowed ſalt on the ruins. Recovering ſlowly, amid the conteſts between the emperors and the popes, it however could not aſſert the form of a republic, but became ſubject to the archbiſhop, and to the Torriani. Napoleon Torre oppoſing Otto Viſconti, archbiſhop of Milan, was defeated in 1277, and the prelate was proclaimed temporal lord of Milan. He was ſucceeded by his nephew; and the family of Viſconti long poſſeſſed this opulent principality. In 1368 Yolande daughter of Galeazzo was married to Lionel duke of Clarence ſon of the Engliſh monarch. This family expired in 1494; and was followed by Sforza, and by the French kings. In 1535 Charles V. ſeized Milan, as a fief of the empire, and gave it to his ſon Philip; whoſe ſucceſſors, kings of Spain, held the Milaneſe till 1706, when it became an appanage of Auſtria; but a conſiderable part had paſſed to the houſe of Sardinia. The revenues of this duchy are computed at about 300,000l. At Pavia is an univerſity of great repute, the profeſſors having much diſtinguiſhed themſelves in natural hiſtory. It is regarded as the firſt in Italy.

Hiſtorical Epochs.

* The iſland of Sardinia may be conſidered as an appendage of Piedmont. Mr. Young (France II. 257) informs us, ſeemingly from good authority, that this iſle has been ſhamefully neglected by the government; for, excluſive of the mountains, the whole country may be regarded as waſte and only cultivated in a few ſpots. The chief proprietors are abſentees, and the peaſantry cruſhed by rapacious ſtewards; the number of inhabitants about 450,000. The frequent waſtes abound with wild ducks; but the number of cattle and ſheep deplorably ſmall, and the moraſſes produce moſt pernicious exhalations.

There

There are manufactures of wool and ſilk, but the latter is inferior to that of Piedmont: there are alſo numerous workmen in gold, ſilver, embroidery, ſteel, and in cryſtal, agate, aventurine, and other ſtones, ſo that the country ſwarms with artizans. Mr. Young[2] repreſents the ſoil as being chiefly ſtrong loam, or loamy ſand; and the moſt remarkable circumſtance in the climate is the mildneſs and warmth of the northern mountainous tracts, and the cold felt in the plains. Orange and lemon trees flouriſh in the open air on the weſtern ſide of the lake of Como, though bounded by the high Alps, which to the north are covered with eternal ſnow; while in the plain of Lombardy, even to the Apennines, theſe trees require ſhelter. The Boromean iſles alſo, in the Lago Maggiore, are covered with theſe delicate trees. In Parma ſevere froſts are felt, which are not unknown in Tuſcany, and even at Rome. The lands in the Milaneſe, as in Piedmont, are moſtly encloſed; and the farmers were metayers upon the old French plan, the landlord paying the taxes and repairs, the tenant providing cattle, implements, and ſeed; and the produce being divided between them: a miſerable ſyſtem which greatly impeded agriculture. The irrigation of the Milaneſe Mr. Young repreſents as a ſtupendous effort of induſtry; and the canals for this purpoſe are mentioned as early as the eleventh century; ſome of them being more than 30 miles long, and near 50 feet wide. The price of land is near 100l. the acre, and yields about three per cent. intereſt. The cattle, dairies, and cheeſe, excellent; but the ſheep few and bad. Though the Milaneſe border, towards the north, on the higher Alps, and might thence be ſuppoſed to rival Piedmont, yet the mineralogy has been little explored, as the houſe of Auſtria poſſeſſes abundance of ancient and productive mines. Yet there are ſome mines of copper and lead above the lake of Como, and the mountains, and Boromean iſles preſent fleſh-coloured granite. Lapis ollaris abounds near Como[3]. Milaneſe. Climate.

The ſmall duchy of Mantua was held by the houſe of Gonzaga, from the fourteenth century; but the laſt of the family being put to the ban of the empire, Mantua has been ſubject to Auſtria, ſince the year 1707, and was ruled by the governor-general of the Milaneſe. The Mantua.

[2] France, ii. 148. [3] Ferber's Italy, 315.

Mantua. capital ſtands on a lake formed by the Mincio, and was formerly ſuppoſed to contain 50,000 inhabitants, now reduced to about 12,000; the poſition and fortifications render it a place of great ſtrength. The Venetian territory to the weſt of the Adige conſiſted chiefly of the Breſcian and Bergameſe, the latter being mountainous; but the Breſcian is fertile in wine, oil, and maize, with excellent paſturages, and ſome mines of copper and iron.

Parma and Placentia. The territories of Parma and Placentia have been conjoined for many ages. They were conteſted by the Lombards, and by the Exarchs of Ravenna; and after many revolutions ſubjected themſelves to the papal ſee, whence they were transferred by Paul III. in favour of his ſon Pietro Farneſe, in 1545. This family being extinct in 1731, after ſome conteſts, the duchies of Parma and Placentia were finally aſſigned to the Bourbon family of Spain. The population is computed at 300,000; revenue 175,000l. Parma is a conſiderable city with ſome manufactures, and an academy of painting; the printing preſs eſtabliſhed by Bodoni was diſtinguiſhed for beautiful productions. Both Parma and Placentia have univerſities. The ſoil is a rich ſandy or gravelly loam, with fine paſtures; and the Parmeſan cheeſe now made at Lodi in the Milaneſe has been celebrated for many centuries.[4] The farms are ſmall and agriculture ill conducted, irrigation being here little practiſed. The ſheep are bad, and the wool like hair. The improvement of the country was much neglected by the Bourbon family.

Modena. The duchy of Modena is a remnant of the power of the celebrated family of Eſte, who alſo poſſeſſed the adjacent country of Ferrara, ſeized by the Pope in 1598. The remaining territory contains about 320,000 ſouls, and the city of Modena 30,000; the revenue 140,000l. The ſoil reſembles that of the duchy of Parma; and the agriculture is little ſuperior, the middle-men and metayers impeding induſtry, but ſome peaſants in the mountains are proprietors of land. The breed of ſheep is neglected. It

Natural Curioſities. is remarkable that in digging wells near Modena, at a certain depth, a particular ſtratum is found, which being paſſed, the water guſhes up as from a ſubterranean lake or river. About ten miles to the ſouth of

[4] Young's France, ii. 148. There are iron founderies near the Apennines. Keyſler, iv. 113.

the capital there is an aperture in the earth, called La Salza, whence, particularly in the ſpring and autumn, aſcend ſmoke, flame, aſhes, and ſtones, with a ſtrong ſmell of ſulphur. Carrara in the S. of this duchy affords the celebrated marble uſed in ſtatuary. MODENA.

The imperial fiefs, and ſmaller ſtates, in this part of Italy, would little merit deſcription, eſpecially in the midſt of the preſent revolution. This account ſhall therefore cloſe with the republic of Genoa, conſiſting of a long mountainous tract, formerly noted for the acuteneſs and treachery of the Ligurians its inhabitants. The city of *Genua* was deſtroyed by Mago the Carthaginian general, and rebuilt by the Romans. It afterwards became ſubject to the Lombards, and the emperors of Germany; but in 806 had ſeized Corſica, and in the eleventh and twelfth centuries was diſtinguiſhed in the Cruſades, the Genoeſe rendering themſelves maſters of the Black Sea with eſtabliſhments in the Crimea, and even in the ſuburb of Pera at Conſtantinople, where they remained till the Turks took that city.[5] Genoa ſtrongly conteſted with Venice the dominion of the ſea; and the war was not terminated till 1381. In 1471 the Genoeſe were expelled from the Crimea; but their maritime power continued reſpectable. The form of government was more democratic than that of Venice, ſo that the latter had a more firm executive effect. Exhauſted by the Venetian war, Genoa offered voluntary ſubjection to France and Milan; but in 1528 Andrew Doria delivered his country and introduced a more ſtable and ariſtocratic government, which continued till 1798, when the French form was choſen, and the new ſtyle aſſumed of the Ligurian republic, confirmed by the recent treaty of February 1801. In 1730 Corſica revolted from Genoa, and has not ſince been reſtored. In 1745 the Genoeſe declared war againſt the king of Sardinia, but ſuffered greatly in the conteſt. The papal power is here little venerated, the people being immerſed in buſineſs, and receiving monied heretics with open arms. The population of the territory is computed at 400,000; of the city at 80,000. The troops, including the country militia, may amount to 30,000; but the powerful fleets have ſunk to a few gallies. The air is pure and Genoa. Hiſtorical Epochs.

5 See Gibbon, xi. 390.

ſalubrious,

GENOA. ſalubrious, and there are excellent fruits and vegetables; but the grain is not ſufficient for the conſumption. The manufactures are chiefly of ſilk and velvet. The Apennines, which encloſe this region, are in ſome places covered with foreſts, but in others are barren rocks, while in a few they afford delicious paſturage. They ſupply excellent marble for the proud palaces of Genoa; while Polzevera in the Bocchetta yields the beautiful ſtone ſo called, being ſerpentine of various colours veined with marble. In 1778 a magnificent road was made from the Bocchetta or mountains to the north of Genoa, through the Polzevera, which for the ſpace of three years employed from 5 to 800 men, by the patriotic munificence of one noble family the Cambiaſi.[6]

This brief account of the northern diviſion of Italy muſt not be cloſed without remarking, that the Ciſalpine, or rather Tranſalpine or Paduan, republic, is re-eſtabliſhed by the treaty of Luneville, 9th Feb. 1801. By art. XII. that republic is again acknowledged, as conſtituted by art. VIII. of the treaty of Campo Formio.*

[6] Stolberg, 1. 215.

* This Volume was written in the year 1800, and retouched in 1801. At preſent, May 1802, it may be proper to add, that the author has received from Paris a map, recommended as accurate by a learned profeſſor at Milan, in which the boundaries of the Italian Republic are diſtinctly marked. They extend to the utmoſt boundary of Romagna on the S. E. where they alſo border on the little republic of St. Marino; and, purſuing the northern limits of Tuſcany and Lucca, embrace Modena, Carrara, and Maſſa; with Villa Franca, Ulla, and Foſdinovo (Imperial Fiefs). Thence the boundary proceeds on the E. of Parma, and N. of Placentia, including the Lumelline; and, aſcending the river Seſia, comprizes the Val di Seſia A new grand road has been opened by Mount Simplon. The remaining N. limit is chiefly that of the Milaneſe and Venetian Bergameſque; but with Chiavenna, the Valteline and Bormio. The Trentin is left entire on the E. and the river Adige is followed from near Peri to its mouth, whence the Adriatic ſea completes the line to the ſouth of Romagna. Tortona, Voghera, and the Fiefs on the W. of Parma, are not included in the demarcation. The Preſidency of the Italian Republic has been conferred on the illuſtrious Chief Conſul Bonapart.

The Pontiff Pius VII. (Chiaramonti, elected March 14th, 1800) retains the remainder of the territories of the church; and the Catholic ſyſtem is declared predominant in France, The kingdom of Naples remains entire; and the hiſtory of Charles VIII. might have warned the French againſt any expedition into the ſouth of Italy. The new kingdom of Tuſcany has been already mentioned: (France is ſuppoſed to retain the iſle of Elba.) The fate of Piedmont ſeems not finally determined, but it continues ſubject to France.

APPEN-

APPENDIX

TO

VOLUME FIRST.

No. I. *Treaties of Campo Formio* 1797, *and of Luneville* 1801.

*** *Theſe Treaties having introduced conſiderable Alterations into European Geography, it was thought adviſeable to ſubjoin them.*

1. *Treaty of Campo Formio, with the Secret Articles,* 17th October 1797.

HIS majeſty the emperor of the Romans, king of Hungary and Bohemia, and the French republic, being deſirous to conſolidate a peace, the baſis of which was laid in the preliminaries ſigned at the caſtle of Eckenwald, near Leoben in Stiria, on the 18th of April 1797, (the 29th Germinal, 5th year of the French republic one and indiviſible,) have named for their plenipotentiaries; viz. his majeſty the emperor and king, the Sieur D. Martius Maſtrily, and the noble Neapolitan patrician Marquis de Gallo, knight of the royal order of St. Januarius, gentleman of the bedchamber to his majeſty the king of the two Sicilies, and his ambaſſador extraordinary at the court of Vienna; the Sieur Louis, count of the holy Roman empire, de Cobenzel, and great croſs of the royal order of St. Stephen, chamberlain, privy councillor of his ſaid imperial and royal apoſtolic majeſty, and his ambaſſador extraordinary to his imperial majeſty of all the Ruſſias; the Sieur Maximilian count de Meerveldt, knight of the Teutonic order, and of the military order of Maria Thereſa, chamberlain and major-general of the cavalry in the armies of his ſaid majeſty the emperor and king; and the Sieur Ignatius baron de Degelmann, miniſter plenipotentiary of his ſaid majeſty to the Swiſs republic:—and the French republic, Buonaparte, commander in chief of the French army in Italy.

The aforeſaid plenipotentiaries, after an exchange of their reſpective powers, have agreed upon the following articles:

Article I. There ſhall be hereafter a ſolid, perpetual, and inviolable peace, between his majeſty the emperor of the Romans, king of Hungary and Bohemia, his heirs and ſucceſſors, and the French republic.

The contracting parties ſhall give the greateſt attention to the maintaining, between themſelves and their reſpective dominions, the moſt perfect harmony, without hereafter permitting on either ſide any kind of hoſtilities to be committed, either by ſea or land, for any cauſe or under any pretence whatever; and they ſhall carefully avoid for the future any thing which might prejudice the union happily eſtabliſhed. There ſhall not be granted any ſuccour or protection, either directly or indirectly, to thoſe who ſhall attempt any thing injurious or prejudicial againſt either of the contracting parties.

II. Immediately after the exchange of the ratifications of the preſent treaty, the contracting parties ſhall take off all ſequeſtrations impoſed on the effects, rights, and properties of individuals reſiding in the reſpective territories and countries that are united to them, and alſo of the public eſtabliſhments ſituated therein; they bind themſelves to pay all the debts they may have contracted, for pecuniary advances made to them by the ſaid individuals, and public eſtabliſhments, and to diſcharge or reimburſe all the

annuities

annuities forfeited to their advantage by each of the contracting parties. The preſent article is declared to extend to the Ciſalpine republic.

III. His majeſty the emperor, king of Hungary and Bohemia, renounces for himſelf and his ſucceſſors, in favour of the French republic, all his rights and titles to the ci-devant *Auſtrian Netherlands*.—The French republic ſhall enter on the perpetual poſſeſſion of theſe countries, in full right and ſovereignty, and on all the territorial poſſeſſions dependent thereon.

IV. All debts mortgaged before the war, on the land of the countries expreſſed in the preceding articles, and which mortgages ſhall have been drawn up with the uſual formalities, ſhall be diſcharged by the French republic. The plenipotentiaries of his majeſty the emperor, king of Hungary and Bohemia, ſhall tranſmit a ſtatement of them, as ſoon as poſſible, to the plenipotentiary of the French republic, and previous to the exchange of the ratifications, to the end that, at the time of this exchange, the plenipotentiaries of both powers may come to an agreement upon all the explanatory and additional articles of the preſent treaty, and ſign them.

V. His majeſty the emperor, king of Hungary and Bohemia, conſents that the French republic ſhall poſſeſs, in full ſovereignty, the ci-devant *Venetian iſlands* of the Levant, viz. Corfou, Zante, Cephalonia, St. Maure, Cerigo, and other iſlands dependent thereon; together with Butrinto, Larta, Vouizza, and in general all the ci-devant Venetian eſtabliſhments in Albania, which are ſituate lower down than the gulf of Lodrino.

VI. The French republic conſents that his majeſty the emperor and king ſhall poſſeſs, in full ſovereignty, the countries hereinafter mentioned, viz. *Iſtria*, *Dalmatia*, the ci-devant Venetian iſlands in the Adriatic, the mouths of the Caſtaro, the city of *Venice*, the Venetian canals; and the countries that lie between the hereditary ſtates of his majeſty the emperor and king, the Adriatic ſea, and the line to be drawn from the Tyrol along the torrent before Gardola, ſtretching across the lake Garda as far as Lacita; from thence a military line ſhall be drawn to Sangiacomo, holding out an equal advantage to both parties, which line ſhall be traced out by engineer officers appointed on either ſide, previous to the exchange of the ratifications of the preſent treaty. The line or limitation ſhall then paſs the Adige to Sangiacomo, running along the left bank of that river to the mouth of the Canalblanc, compriſing in it that part of Porto Legnago that lies on the right ſide of the Adige, together with a diſtrict of 3000 toiſes. The line ſhall be continued along the left bank of the Canalblanc, the left bank of the Tartaro, the left bank of the canal called Poliſella, to where it empties itſelf into the Po, and along the left bank of the Great Po as far as the ſea.

VII. His majeſty the emperor, king of Hungary and Bohemia, renounces for ever, in his own name, and in that of his ſucceſſors, &c. in favour of the *Ciſalpine republic*, all the rights, and titles ariſing from theſe rights, which his ſaid majeſty might pretend to have over theſe countries before the war, and which countries at preſent conſtitute a part of the Ciſalpine republic; which republic ſhall poſſeſs them in their full right and ſovereignty, together with all their territorial dependencies.

VIII. His majeſty the emperor, king of Hungary and Bohemia, acknowledges the *Ciſalpine republic* as an independent power. *This republic comprizes* the ci-devant Auſtrian Lombardy, the Bergameſque, the Breſcian, the Cremoneſque, part of the ci-devant Venetian ſtates to the eaſt and ſouth of the Legner, deſcribed in the ſixth article as the frontier of the ſtates of his majeſty the emperor in Italy, the Modeneſe, the principality of Maſſa and Carrara, and the three legations of Bologna, Ferrara, and Romagna.

IX. In all countries ceded, acquired, or exchanged, in virtue of the preſent treaty, all ſequeſtration impoſed on the effects, rights, and property of individuals, belonging to theſe countries, ſhall be taken off; which individuals ſhall have been thus affected on account of the war that has ſubſiſted between his imperial and royal majeſty and the French republic; nor ſhall they on this account be moleſted in their perſons and property. Such perſons as may hereafter be deſirous to withdraw from the ſaid countries ſhall be bound to make a declaration of ſuch their intention, three months before the publication of the treaty or definitive peace: There ſhall be granted them the term of three months to enable them to ſell their effects, either moveable or immoveable, and diſpoſe of them in the manner they may judge moſt expedient.

X. The countries ceded, acquired, or exchanged, by virtue of the preſent treaty, ſhall leave the debts mortgaged on their territories, to be diſcharged by thoſe under whoſe dominion they may fall.

XI. The navigation of ſuch rivers and canals as mark the boundaries between the poſſeſſions of his majeſty the emperor, king of Hungary and Bohemia, and thoſe of the French republic, ſhall be free; without its being permitted to either of the powers to eſtabliſh any toll or cuſtom on them, or keep thereon any armed veſſel, by which however is not precluded any precaution which may be thought neceſſary for the protection and ſafety of the fortreſs of Porto Legnago.

XII. All ſales or alienations of property, all engagements entered into either by the cities or by the government, or by the civil adminiſtrative authorities of the ci-devant Venetian territories, for the maintenance of the German and French armies, up to the date of the ſignature of the preſent treaty, ſhall be confirmed and acknowledged as valid.

XIII. The territorial titles and archives of the different countries, ceded or exchanged by the preſent treaty, ſhall, within two months from the date of the exchange

exchange of the ratification, be put into the hands of the powers which ſhall have acquired the property of them. The plans and maps of the fortreſſes, towns, and countries, which the contracting parties acquire by the preſent treaty, ſhall be faithfully given up to them. The military papers and regiſters, taken in the preſent war from the ſtaff-major of the reſpective armies, ſhall be reſtored in the ſame manner.

XIV. The two contracting parties, equally animated with the deſire of removing every ground that might interrupt the good underſtanding happily eſtabliſhed between them, mutually bind themſelves, in the moſt ſolemn manner, to contribute, to the utmoſt of their power, to the maintenance of internal tranquillity in their reſpective ſtates.

XV. There ſhall immediately be concluded a treaty of commerce, founded upon an equitable baſis, and ſuch as ſhall ſecure to his majeſty the emperor, king of Hungary, and the French republic, advantages equal to thoſe which the moſt favoured nations enjoy in their reſpective ſtates. Meanwhile all communications, and commercial relations, ſhall be reſtored to the ſituation in which they ſtood before the war.

XVI. No inhabitant of all the countries occupied by the Auſtrian and French armies ſhall be proſecuted or queſtioned, either in his perſon or property, on account of his political opinions, or his conduct, civil, military, or commercial, during the war that has taken place between the two powers.

XVII. His majeſty the emperor, king of Hungary and Bohemia, ſhall not, agreeably to the principles of neutrality, admit into any of his ports, during the courſe of the preſent war, any veſſels belonging to any of the belligerent powers.

XVIII. His majeſty the emperor, king of Hungary and Bohemia, binds himſelf to cede to the *duke of Modena*, as an indemnification for the territory which that prince and his heirs poſſeſſed in Italy, the *Briſgaw;* which he ſhall poſſeſs upon the ſame conditions as thoſe in virtue of which he poſſeſſed the Modeneſe.

XIX. The landed and perſonal property not alienated, belonging to their royal highneſſes the archduke Charles, and the archduchefs Chriſtiana, which are ſituated in the countries ceded to the French republic, ſhall be reſtored, under the deduction of the expences of ſale, within three years. The ſame ſhall be done relative to the landed and perſonal property of his royal highneſs the archduke Ferdinand, in the territory of the Ciſalpine republic.

XX. There ſhall be held a congreſs, ſolely compoſed of the plenipotentiaries of the Germanic empire and the French republic, for a pacification between the two powers. This congreſs ſhall be opened a month after the ſigning of the preſent treaty, or as ſoon as poſſible.

XXI. All the priſoners of war made on either ſide, and the hoſtages given or carried away, during the preſent war, and here not yet been reſtored, ſhall be given back in forty days, dated from the day of the ſigning of the preſent treaty.

XXII. The warlike contributions, deliveries, furniſhings, and devaſtations of every kind, which have taken place in the reſpective ſtates of the contracting powers, ſhall ceaſe from the day on which the ratifications of the preſent treaty ſhall be exchanged.

XXIII. His majeſty the emperor, king of Hungary and Bohemia, and the French republic, ſhall mutually preſerve to each other the ſame ceremonial, with regard to rank and other etiquettes, which was conſtantly obſerved before the war. His ſaid majeſty, and the Ciſalpine republic ſhall obſerve, with regard to each other, the ſame ceremonial of etiquette which was in uſe between his majeſty and the republic of Venice.

XXIV. The preſent treaty ſhall be ratified by the emperor, king of Hungary and Bohemia, and by the French republic, within thirty days from this day, or ſooner if poſſible; and the inſtruments of ratification in due form ſhall be exchanged at Raſtadt.

Done and ſigned at Campo Formio, near Udine, the 17th October 1797, (26th Vendemiaire, ſixth year of the French republic, one and indiviſible.)

(Signed) BUONAPARTE.
The MARQUIS DE GALLO.
LOUIS COUNT COBENTZEL.
The COUNT DE MEERVELDT.
The BARON DE DEGELMANN.

The executive directory ratifies and ſigns the preſent treaty of peace with his majeſty the emperor, king of Hungary and Bohemia, negotiated in the name of the French republic by citizen Buonaparte, general in chief of the army of Italy, inveſted with powers by the executive directory, and charged with inſtructions to that effect.

Done in the national palace of the executive directory, 5th Brumaire, Oct. 26, ſixth year of the French republic, one and indiviſible.

This treaty was ratified by the council of five hundred on the 31ſt October; and by the council of elders two days after.

Secret Articles, and additional Convention, of the Treaty of Campo Formio, of the 26th Vendemiaire, 6th Year, (Oct. 17, 1797.)

Article I. His majeſty the emperor, king of Hungary and Bohemia, conſents that the boundaries of the French republic ſhall extend to the ordinary mid line, and engages to uſe his influence that the French republic ſhall, by the peace to be concluded with the Germanic empire, retain the ſame line as its boundary; namely, the *Rhine*, from the confines of Switzerland below Bâle, to the branching off of the Nette above Andernach, including the head of the bridge at Manheim, the town and fortreſs of Mentz,

and both banks of the Nette, from where it falls into the Rhine, to its ſource near Bruch. From thence the line paſſes by Konſcherade and Borley to Kerpen, and thence to Ludersdorf, Blantenheim, Marmagen, Coll, and Gemund, with all the circles and territory of theſe places along both banks of the Olff. to where it falls into the Roer, and along both banks of the Roer, including Heimbach, Nideggen, Durin, and Juliers, with their circles and territory; as alſo the places on the banks to Linnig included. Hence the line extends by Hoffern, and Kylenſdalen, Papelernod, Lutersforſt, Rodenberg, Haverſtoo, Anderſcheid, Kaldekuchen, Vampach, Herrigen, and Groſberg, including the town of Venloo and its territory. And if, notwithſtanding the mediation of his imperial majeſty, the German empire ſhall refuſe to conſent to the abovementioned boundary-line of the republic, his imperial majeſty hereby formally engages to furniſh to the empire no more than his contingent, which ſhall not be employed in any fortified place; or it ſhall be conſidered as a rupture of the peace and friendſhip which are reſtored between his majeſty and the republic.

II. His imperial majeſty will employ his good offices, in the negotiation of the peace of the empire, to obtain, 1. That the *navigation of the Rhine*, from Hunningen to the territory of Holland, ſhall be free, both to the French republic and the ſtates of the empire, on the right bank: 2. That the poſſeſſors of territory near the mouth of the Moſelle ſhall never, and on no pretence, attempt to interrupt the *free navigation* and paſſage of ſhips and other veſſels, *from the Moſelle* into the Rhine: 3. The French republic ſhall have the *free navigation of the Meuſe*; and the tolls and other impoſts, from Venloo to Holland, ſhall be aboliſhed.

III. His imperial majeſty *renounces*, for himſelf and his ſucceſſors, the ſovereignty and poſſeſſion of *the county of Falkenſtein* and its dependencies.

IV. The countries which his imperial majeſty takes poſſeſſion of, in conſequence of the ſixth article of the public definitive treaty this day ſigned, ſhall be conſidered as an indemnification for the territory given up by the ſeventh article of the public treaty, and the foregoing article. This renunciation ſhall only be in force when the troops of his imperial majeſty ſhall have taken poſſeſſion of the countries ceded by the ſaid articles.

V. The French republic will employ its influence that his majeſty the emperor ſhall receive the *archbiſhoprick of Salzburg*, and that part of the circle of *Bavaria* which lies between the archbiſhoprick of Salzburg, the river Inn, Salza, and Tyrol; including the town of Waſſerburg on the right bank of the Inn, with an arrondiſſement of 3000 toiſes.

VI. His imperial majeſty, at the concluſion of the peace with the empire, will give up to the French republic the ſovereignty and poſſeſſion of the *Frickthal*, and all the territory belonging to the houſe of Auſtria on the *left bank of the Rhine*, between Zurgach and Baſle, provided his majeſty, at the concluſion of the ſaid peace, receives a proportionate indemnification. The French republic, in conſequence of particular arrangements to be made, ſhall unite the abovementioned territory with the Helvetic republic, without farther interference on the part of his imperial majeſty or the empire.

VII. The two contracting powers agree that when, in the enſuing peace with the German empire, the French republic ſhall make an acquiſition in Germany, his imperial majeſty ſhall receive an equivalent; and if his imperial majeſty ſhall make ſuch an acquiſition, the French republic ſhall in like manner receive an equivalent.

VIII. The prince of Naſſau Dietz, late *ſtadtholder* of Holland, ſhall receive a territorial indemnification; but neither in the vicinity of the Auſtrian poſſeſſions, nor in the vicinity of the Batavian republic.

IX. The French republic makes no difficulty to reſtore to the *king of Pruſſia* his poſſeſſions on the left bank of the Rhine. No new acquiſition ſhall however be propoſed for the king of Pruſſia. This the two contracting powers mutually guarantee.

X. Should the king of Pruſſia be willing to cede to the French and Batavian republics ſome ſmall parts of his territory on the left bank of the Meuſe, as Sevenger, and other poſſeſſions towards the Yſſel, his imperial majeſty will uſe his influence that ſuch ceſſions ſhall be accepted and made valid by the empire.

XI. His imperial majeſty will not object to the manner in which the *imperial fiefs* have been diſpoſed of by the French republic in favour of the Ligurian republic. His imperial majeſty will uſe his influence, together with the French republic, that the German empire will renounce all feudal ſovereignty over the countries which make a part of the Ciſalpine and Ligurian republics, as alſo the imperial fiefs, ſuch as Laniguiana, and thoſe which lie between Tuſcany and the ſtates of Parma, the Ligurian and Lucchefe republics, and the late territory of Modena; which fiefs make a part of the Ciſalpine republic.

XII. His imperial majeſty, and the French republic, will in concert employ their influence, in the courſe of concluding the peace of the empire, that the princes and ſtates of the empire who, in conſequence of the ſtipulations of the preſent treaty of peace, or in conſequence of the treaty to be concluded with the empire, ſhall ſuffer any loſs in territory or rights, (particularly the electors of Mentz, Treves, and Cologne, the elector palatine of Bavaria, the duke of Wirtemberg and Teck, the margrave of Baden, the duke of Deux Ponts, the landgraves of Heſſe Caſſel and Darmſtadt, the princes of Naſſau Saarbruck, Salm, Korburg, Lowenſtein, Weſtheim, and Wied Runckel, and the count de Leyn,) ſhall receive proportionable indemnifications in Germany, which ſhall be ſettled by mutual agreement with the French republic.

XIII. The

XIII. The troops of his imperial majeſty, twenty days after the ratifications of the preſent treaties, ſhall evacuate the towns and fortreſſes of Mentz, Ehrenbreitſtein, Philipſburg, Manheim, Kunigſtein, Ulm, and Ingolſtadt; as alſo the whole territory appertaining to the German empire, to the boundaries of the hereditary ſtates.

XIV. The preſent ſecret articles ſhall have the ſame force as if they were inſerted word for word in the public treaty of peace this day ſigned; and ſhall, in like manner, be ratified at the ſame time by the two contracting powers; which ratifications ſhall be exchanged in due form at Raſtadt.

Done and ſigned at Campo Formio, on the 17th Oct. 1797, 26th Vendemiaire, in the 6th year of the French republic, one and indiviſible.

(Signed) BUONAPARTE.
MARQUIS DE GALLO.
LOUIS COUNT COBENTZEL.
COUNT MEERFELDT, Major-Gen.
COUNT DEGELMANN.

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2. *Treaty of Luneville*, 9th Feb. 1801.

HIS majeſty the emperor, king of Hungary and Bohemia, and the firſt conſul of the French republic, in the name of the French people, being equally deſirous to put an end to the misfortunes of the war, have reſolved to proceed to the concluſion of a definitive treaty of peace and friendſhip.

His ſaid imperial and royal majeſty, not being leſs ardently deſirous to make the Germanic empire partake of the benefits of peace, and the preſent junctures not leaving time neceſſary for the empire being conſulted, and being able to intervene deputies in the negotiation; and his ſaid majeſty conſidering beſides what has been conſented to by the deputation of the empire, in the preceding congreſs of Raſtadt, has reſolved, (as it has been done in ſimilar circumſtances,) to ſtipulate in the name of the Germanic body.

In conſequence of which the contracting parties have appointed for their plenipotentiaries—his imperial and royal majeſty, the Sieur Louis count of the holy Roman empire, de Cobentzel, knight of the golden fleece, grand croſs of the royal order of St. Stephen, and of the order of St. John of Jeruſalem, chamberlain, actual privy counſellor of his ſaid imperial and royal majeſty, his miniſter of conferences, and the vice-chancellor of court and ſtate; and the firſt conſul of the French republic, in the name of the French people, citizen Joſeph Buonaparte counſellor of State:

Who, after having exchanged their full powers, have determined on the following articles:

Article I. There ſhall be for the future, and for ever, peace, friendſhip, and good intelligence, between his majeſty the emperor, king of Hungary and Bohemia, ſtipulating as well in his name as in the name of the Germanic empire, and the French republic; his ſaid majeſty pledging himſelf to make the ſaid empire ratify, in good and due form, the preſent treaty. The greateſt attention will be given on one part, and on the other, to the maintenance of a perfect harmony, and to prevent any kind of hoſtility, by land or by ſea, for whatever cauſe, and under whatever pretence, by applying themſelves with care to entertain the union happily re-eſtabliſhed. No aſſiſtance and protection will be given, neither directly nor indirectly, to thoſe who would prejudice one or the other of the contracting parties.

II. The *ceſſion of the* ci-devant *Belgic provinces* to the French republic, ſtipulated by the third article of the treaty of Campo Formio, is here renewed in the moſt formal manner; ſo that his imperial and royal majeſty, for himſelf and his ſucceſſors, as well in his name as in the name of the Germanic empire, renounces all his rights and titles to the aforeſaid provinces, which ſhall be poſſeſſed for ever, in full ſovereignty and property, by the French republic, with all the territorial eſtates belonging to them.

There ſhall likewiſe be given up to the French republic, by his imperial and royal majeſty, and with the formal conſent of the empire—

1ſt. The *county of Falkenſtein*, with all its dependencies:

2dly. The *Frickthal*, and every thing which belongs to the houſe of Auſtria, on the *left bank of the Rhine*, between Zurzach and Baſle; the French Republic reſerving to herſelf to yield this laſt country to the Helvetic republic.

III. In the ſame manner, in renewing and confirming the 6th article of the treaty of Campo Formio, his majeſty the emperor and king ſhall poſſeſs in full ſovereignty and property the countries hereafter deſigned, to wit:—*Iſtria*, *Dalmatia*, and the Venetian ſtates of the Adriatic dependent thereon; the mouths of the Catara, the city of *Venice*, the marſhes (les lagunes,) and the country comprized between the hereditary ſtates of the emperor, the Adriatic ſea, and the Adige, from its quitting Tyrol to its embouchure in the ſaid ſea, the *thalweg* of the Adige ſerving for a line of limitation: and as the adopting of this line will interſect the towns of Verona and Porto Legnago, drawbridges ſhall be eſtabliſhed in the middle of them, in order to mark their ſeparation.

IV. The eighteenth article of the treaty of Campo Formio is in like manner renewed, ſo far as obliges his majeſty the emperor and king to cede to the *duke of Modena*, as an indemnity for the country this prince and his heirs had in Italy, the *Briſgaw*, which he ſhall poſſeſs on the ſame conditions as the ſe in virtue of which he poſſeſſed the Modeneſe.

V. It is alſo agreed, that his royal highneſs the grand duke of Tuſcany renounces for himſelf, his heirs, ſucceſſors and aſſigns, the *grand duchy of Tuſcany*, and

that part of the iſland of *Elba* which is dependant thereon, as well as all rights and titles reſulting from the dominion of the ſaid ſtates; the ſame ſhall be poſſeſſed in full ſovereignty and property by his royal highneſs *the infant duke of Parma*. The grand duke will obtain a full indemnity in Germany for the loſs of his eſtates in Italy. The grand duke may diſpoſe as he pleaſes of the eſtates and property which he particularly poſſeſſes in Tuſcany, whether by perſonal acquiſition, or by heirſhip of the perſonal acquiſitions of the deceaſed emperor Leopold II., his father, or of the deceaſed emperor Francis I., his grandfather. It is alſo agreed, that the trufts, eſtabliſhments, and other property of the grand duchy, as well as the debts from mortages on the country, ſhall be transferred to the new grand duke.

VI. His majeſty the emperor and king, as well in his own name as in that of the Germanic empire, conſents that in future the French republic ſhall poſſeſs, in full ſovereignty and property, the countries and domains ſituated on the *left bank of the Rhine*, and which made part of the German empire, in a manner conformable to that which had been expreſsly conſented to at the congreſs of Raſtadt by the deputation of the empire, and approved by the emperor; the *thalweg* of the Rhine being hereafter the limit between the French republic and the German empire, to wit, from the place where the Rhine leaves the Helvetic territory, to that where it enters the Batavian territory. In conſequence of which the French republic formally renounces every poſſeſſion whatſoever on the right bank of the Rhine, and conſents to reſtore to whomſoever they may belong the places of Duſſeldorff, Ehrenbreitſtein, Philipſburg, the fort of Caſſel, and other fortifications oppoſite Mayence on the right bank; as alſo the fort of Kehl and Old Briſſac, upon the expreſs conditions that thoſe places and forts ſhall continue and remain in the ſame ſtate as at their evacuation.

VII. And as in virtue of the ceſſion which the empire makes to the French republic, ſeveral princes and ſtates of the empire will be diſpoſſeſſed, in the whole or in part, of what belonged to them, particularly; while collectively the German empire has to ſupport the loſſes reſulting from the ſtipulations of the preſent treaty; it is agreed between his majeſty the emperor and king, as well in his own name as in that of the German empire, and the French republic, that, conformably to the principles laid down and eſtabliſhed at the congreſs of Raſtadt, the empire is bound to give to the hereditary princes, ſo diſpoſſeſſed on the left bank of the Rhine, an indemnification to be taken from the body of the empire, according to the arrangements which, after the ſaid baſis, will be ultimately determined upon.

VIII. Throughout all the ceded countries, acquired or exchanged by the preſent treaty, it is agreed upon, as it had been by the 4th and 10th articles of the treaty of Campo Formio, that thoſe to whom they will belong take upon themſelves the debts as mortgages upon the land of the ſaid country; but in conſideration of the difficulties which, in regard to this matter, the interpretation of the ſaid articles in the treaty of Campo Formio gave riſe to, it is expreſsly underſtood that the French republic only takes upon itſelf the debts ariſing from the loans formally conſented to by the ſtates of the ceded countries, or the expences incurred by the effective adminiſtration of the ſaid countries.

IX. Immediately after the exchange of the ratification of the preſent treaty, there ſhall be granted, in all the countries ceded, acquired, or exchanged by the ſaid treaty, to all the inhabitants and proprietors whomſoever, an exemption from the ſequeſtration put on their goods, effects, and revenues, on account of the war which has taken place. The contracting parties oblige themſelves to diſcharge all they may owe for principal lent to them, by the ſaid individuals, as well as by the public eſtabliſhments of the ſaid countries; and to pay or reimburſe all the intereſt accruing to them by each of the ſaid parties. In conſequence of which it is expreſsly ſtipulated that the proprietors of ſtock of the bank of Vienna, become French, ſhall continue to enjoy the benefit of their ſtock, and receive the intereſt accrued or to accrue, notwithſtanding any ſequeſtration or forfeiture, which ſhall be conſidered as not having taken place; particularly the forfeiture reſulting from the French proprietors not having furniſhed the thirty, and the cent per cent, demanded of the proprietors of ſtock of the bank of Vienna by his majeſty the emperor and king.

X. The contracting parties ſhall reciprocally remove the ſequeſtrations that have been put, in conſequence of the war, on the goods, rights, and revenues of the ſubjects of his majeſty the emperor, or of the empire, in the territory of the French republic; and of the French citizens, in the ſtates of his ſaid majeſty or of the empire.

XI. The preſent treaty of peace, particularly the articles 8, 9, 10, and the 15th hereinafter, are declared common to the Batavian, Helvetic, Ciſalpine, and Ligurian republics. The contracting parties mutually guarantee the independence of the ſaid republics; and the right of the people who inhabit them to adopt ſuch form of government as they ſhall judge fit.

XII. His imperial and royal majeſty renounces, for himſelf and his ſucceſſors, in favour of the Ciſalpine republic, all rights and titles accruing from thoſe rights, which he might claim over thoſe countries which he poſſeſſed before the war; and which, under the terms of the 8th article of the treaty of Campo Formio, make a part of the *Ciſalpine republic*, which ſhall poſſeſs them in full ſovereignty and property, with all the territorial property depending on them.

XIII. His imperial and royal majeſty, as well in his own name as in the name of the Germanic empire, confirms the adherence already given, by the treaty of Campo Formio, to the re-union of the heretofore *im-*

feudal fiefs to the Ligurian republic; and renounces all rights and titles accruing from thoſe rights over the ſaid fiefs.

XIV. Conformably to the article of the treaty of Campo Formio the navigation of the Adige, ſerving as the limit between the ſtates of his imperial and royal majeſty, and thoſe of the Ciſalpine republic, ſhall be free; ſo that neither party ſhall eſtabliſh thereon any toll, nor keep any armed veſſels thereon.

XV. All the priſoners of war, taken on the one ſide and the other, as well as the hoſtages taken or given during the war, who have not yet been reſtored, ſhall be reſtored within forty days from the ſignature of the preſent treaty.

XVI. All the real and perſonal property of his royal highneſs the archduke Charles, not alienated, and of the heirs of her late royal highneſs the archduchess Chriſtiana, ſituated in the countries ceded to the French republic, ſhall be reſtored to them on condition that the ſaid property ſhall be ſold within the ſpace of three years. The ſame ſhall extend to the real and perſonal property of their royal highneſſes the archduke Ferdinand, and the archduchess Beatrix his wife, which they poſſeſſed in the territory of the Ciſalpine republic.

XVII. The 12th, 13th, 15th, 16th, 17th, and 18th articles of the treaty of Campo Formio ſhall be again in full force, to be executed according to their form and tenor, as if they were inſerted verbatim in the preſent treaty.

XVIII. The contributions, levies, ſupplies of proviſions and other ſupplies of war, ſhall ceaſe from the date of the exchange of the ratifications of the preſent treaty, on the part of his majeſty the emperor, and by the Germanic empire, and on the part of the French republic.

XIX. The preſent treaty ſhall be ratified by his majeſty the emperor and king, by the empire, and by the French republic, within thirty days, or ſooner if it can be done; and it is agreed upon that the armies of the two powers ſhall remain in the poſitions where they now are, both in Germany and Italy, until the ſaid ratifications of the emperor and king, of the empire, and of the French republic, ſhall be at the ſame time exchanged at Luneville by the reſpective plenipotentiaries. It is alſo agreed upon, that ten days after the exchange of the ſaid ratifications, the armies of his imperial and royal majeſty ſhall re-enter his hereditary poſſeſſions, which ſhall in the ſame time be evacuated by the French armies; and that thirty days after the ſaid exchange the French armies ſhall evacuate the whole of the territory of the ſaid empire.

Done and ſigned at Luneville, the 20th Pluvioſe, 9th year of the French republic—9th Feb. 1801.

LOUIS COUNT COBENTZEL.
JOSEPH BUONAPARTE.

No. II. *Treaty of Peace between Great Britain and the French Republic, concluded at Amiens, 27th March 1802* *.

Article I. THERE ſhall be peace, friendſhip, and good underſtanding between the French republic, his majeſty the king of Spain, his heirs and ſucceſſors, and the Batavian republic, on the one ſide, and his majeſty the king of the united kingdom of Great Britain and Ireland, his heirs and ſucceſſors, on the other part. The contracting parties ſhall uſe their utmoſt efforts to preſerve a perfect harmony between their reſpective countries, without permitting any act of hoſtility whatever, by ſea or by land, for any cauſe, or under any pretext. They ſhall carefully avoid every thing which might for the future diſturb the happy union now re-eſtabliſhed between them; and ſhall not give any ſuccour or protection, directly or indirectly, to thoſe who would wiſh to injure any one of them.

II. All the priſoners made on one ſide and the other, as well by land as by ſea, and the hoſtages carried off or delivered up during the war, and to the preſent day, ſhall be reſtored without ranſom, in ſix weeks at the lateſt, to be reckoned from the day on which the ratifications of the preſent treaty are exchanged; and on paying the debts which they ſhall have contracted during their captivity. Each of the contracting parties ſhall reſpectively diſcharge the advances which ſhall have been made by any of the contracting parties, for the ſupport and maintenance of priſoners, in the countries where they have been detained. There ſhall be appointed, by mutual conſent, for this purpoſe, a commiſſion ſpecially empowered to aſcertain and determine the compenſation which may be due to any one of the contracting parties. The time and the place ſhall likewiſe be fixed by mutual conſent, for the meeting of the commiſſioners, who ſhall be entruſted with the execution of this article; and who ſhall take into account not only the expences incurred on account of the priſoners of the reſpective nations, but likewiſe on account of the foreign troops who, before being taken, were in the pay, and at the diſpoſal, of one of the contracting parties.

III. His Britannic majeſty reſtores to the French republic

* Tranſlated from the French counterpart.

republic and its allies, viz. his catholic majeſty and the Batavian republic, all the poſſeſſions and colonies which reſpectively belonged to them, and which have been either occupied or conquered by the Britiſh forces during the courſe of the preſent war, with the exception of the iſland of Trinidad, and of the Dutch poſſeſſions in the iſland of Ceylon.

IV. His catholic majeſty cedes and guarantees, in full property and ſovereignty, the iſland of Trinidad to his Britannic majeſty.

V. The Batavian republic cedes and guarantees, in full property and ſovereignty, to his Britannic majeſty all the poſſeſſions and eſtabliſhments in the iſland of Ceylon, which previous to the war belonged to the republic of the United Provinces, or to the Dutch Eaſt India company.

VI. The port of the Cape of Good Hope remains to the Batavian republic, in full ſovereignty, in the ſame manner as it did previous to the war.—The ſhips of every kind belonging to the other contracting parties ſhall be allowed to enter the ſaid port, and there to purchaſe what proviſions they may ſtand in need of, as heretofore, without being liable to pay any other impoſts than ſuch as the Batavian republic compels the ſhips of its own nation to pay.

VII. The territories and poſſeſſions of her moſt faithful majeſty are maintained in their integrity, ſuch as they were antecedent to the war. Nevertheleſs, the boundaries of French and Portugueſe Guiana are fixed by the river Arawari, which empties itſelf into the Ocean above Cape North, near the iſlands Nuovo and Penetentia, about a degree and a third of north latitude. Theſe boundaries ſhall run along the river Arawari, from its mouth the moſt diſtant from Cape North, to its ſource, and afterwards on a right line, drawn from that ſource to the Rio-Branco towards the weſt. In conſequence the northern bank of the river Arawari, from its moſt diſtant mouth to its ſource, and the territories that lie to the north of the line of the boundaries, laid down as above, ſhall belong in full ſovereignty to the French republic. The ſouthern bank of the ſaid river, from the ſame mouth, and all the territories to the ſouth of the ſaid line, ſhall belong to her moſt faithful majeſty.—The navigation of the river Arawari, along the whole of its courſe, ſhall be common to both nations.—The arrangements which have been agreed upon between the courts of Madrid and Liſbon, reſpecting the ſettlement of their boundaries in Europe, ſhall nevertheleſs be adhered to, conformably to the ſtipulations of the treaty of Badajoz *.

VIII. The territories, poſſeſſions, and rights of the Sublime Porte are maintained in their integrity, as they were before the war.

IX. The republic of the Seven Iſlands is recogniſed.

X. The iſlands of Malta, Gozo, and Comino, ſhall be reſtored to the order of St. John of Jeruſalem, to be held on the ſame conditions on which it poſſeſſed them before the war, and under the following ſtipulations:

1. The knights of the order, whoſe languages ſhall continue to ſubſiſt after the exchange of the ratification of the preſent treaty, are invited to return to Malta as ſoon as the exchange ſhall have taken place. They will there form a general chapter, and proceed to the election of a grand maſter, choſen from among the natives of the nation which preſerve their language *, unleſs that election has been already made ſince the exchange of the preliminaries.—It is underſtood that an election made ſubſequent to that epoch ſhall alone be conſidered valid, to the excluſion of any other that may have taken place at any period prior to that epoch.

2. The governments of the French republic and of Great Britain, deſiring to place the order and iſland of Malta in a ſtate of entire independence, with reſpect to them, agree that there ſhall not be in future either a French or Engliſh language, and that no individual belonging to either the one or the other of theſe powers ſhall be admitted into the order.

3. There ſhall be eſtabliſhed a Malteſe language, which ſhall be ſupported by the territorial revenues and commercial duties of the iſland. This language ſhall have its peculiar dignities, an eſtabliſhment, and an hotel. Proofs of nobility ſhall not be neceſſary for the admiſſion of knights of this language; and they ſhall be moreover admiſſible to all offices, and ſhall enjoy all privileges, in the ſame manner as the knights of the other languages. At leaſt half of the municipal, adminiſtrative, civil, judicial, and other employments depending on the government, ſhall be filled by inhabitants of the iſlands of Malta, Gozo, and Comino.

4. The forces of his Britannic majeſty ſhall evacuate the iſland and its dependencies within three months from the exchange of the ratifications, or ſooner if poſſible. At that epoch it ſhall be given up to the order, in its preſent ſtate, provided the grand maſter or commiſſaries, fully authoriſed according to

* By that treaty the ſmall province of Olivenza was ceded to Spain, and the river Guadiana conſtituted the boundary between Spain and Portugal. By the treaty between France and Portugal, 29th September 1801, it was aſſumed "that the boundaries of French and Portugueſe Guiana ſhall be determined in future by the river Carapanatuba, which flows into the river Amazon, about a third of a degree of north latitude above fort Macapa. Theſe limits ſhall follow the courſe of the river to its ſource, whence they ſhall take a direction to the grand chain of mountains which divide the two rivers; they ſhall follow the windings of that chain to the point neareſt to Rio Branco, between the ſecond and third degree north of the equator."

In addition to the Spaniſh part of St. Domingo it is rumoured that Louiſiana is reſigned to France.

* A language here ſignifies a right of election, as belonging to a particular catholic nation. Thus, in the Malteſe form, the knights choſen in France were ſtyled of the French language, &c.

the

the ſtatutes of the order, ſhall be in the iſland to take poſſeſſion; and that the force which is to be provided by his Sicilian majeſty, as is hereafter ſtipulated, ſhall have arrived there.

5. One half of the garriſon at leaſt ſhall be always compoſed of native Malteſe; for the remainder the order may levy recruits in thoſe countries only which continue to poſſeſs the languages *(poſſeder les langues)*. The Malteſe troops ſhall have Malteſe officers. The command in chief of the garriſon, as well as the nomination of the officers, ſhall pertain to the grand maſter; and this right he cannot reſign, even temporarily, except in favour of a knight, and in concurrence with the advice of the council of the order.

6. The independence of the iſles of Malta, of Gozo, and Comino, as well as the preſent arrangement, ſhall be placed under the protection and guarantee of France, Great Britain, Auſtria, Spain, Ruſſia, and Pruſſia.

7. The neutrality of the order, and of the iſland of Malta, with its dependencies, is proclaimed.

8. The ports of Malta ſhall be opened to the commerce and navigation of all nations, who ſhall there pay equal and moderate duties: theſe duties ſhall be applied to the cultivation of the Malteſe language, as ſpecified in paragraph 3; to that of the civil and military eſtabliſhments of the iſland; as well as to that of a general *lazaretto*, open to all enſigns.

9. The ſtates of Barbary are excepted from the conditions of the preceding paragraphs, until, by means of an arrangement to be procured by the contracting parties, the ſyſtem of hoſtilities, which ſubſiſts between the ſtates of Barbary and the order of St. John, or the powers poſſeſſing the languages, or concurring in the compoſition of the order, ſhall have ceaſed.

10. The order ſhall be governed, both with reſpect to ſpirituals and temporals, by the ſame ſtatutes which were in force when the knights left the iſle, as far as the preſent treaty ſhall not derogate from them.

11. The regulations contained in the paragraphs 3, 5, 7, 8, and 10, ſhall be converted into laws and perpetual ſtatutes of the order, in the cuſtomary manner: and the grand maſter, (or if he ſhall not be in the iſland at the time of its reſtoration to the order, his repreſentative,) as well as his ſucceſſors, ſhall be bound to take an oath for their punctual obſervance.

12. His Sicilian majeſty ſhall be invited to furniſh two thouſand men, natives of his ſtates, to ſerve in garriſon of the different fortreſſes of the ſaid iſlands. That force ſhall remain one year, to bear date from their reſtitution to the knights; and if at the expiration of this term, the order ſhould not have raiſed a force ſufficient, in the judgment of the guaranteeing powers, to garriſon the iſland and its dependencies, ſuch as is ſpecified in the paragraph, the Neapolitan troops ſhall continue there until they ſhall be replaced by a force deemed ſufficient by the ſaid powers.

13. The different powers deſignated in the 6th paragraph, viz. France, Great Britain, Auſtria, Spain, Ruſſia, and Pruſſia, ſhall be invited to accede to the preſent ſtipulations.

XI. The French troops ſhall evacuate the kingdom of Naples and the Roman ſtates; the Engliſh forces ſhall alſo evacuate Porto Ferrajo, and generally all the ports and iſlands which they occupy in the Mediterranean, or the Adriatic.

XII. The evacuations, ceſſions, and reſtitutions, ſtipulated by the preſent treaty, ſhall be executed in Europe within a month; on the continent and ſeas of America and Africa, in three months; on the continent and ſeas of Aſia, in the ſix months which ſhall follow the ratification of the preſent definitive treaty; except in caſe of a ſpecial reſervation.

XIII. In all caſes of reſtitution agreed upon by the preſent treaty, the fortifications ſhall be reſtored in the condition they were in at the time of ſigning the preliminaries; and all the works which ſhall have been conſtructed ſince their occupation, ſhall remain untouched. It is agreed beſides, that in all the ſtipulated caſes of ceſſions, there ſhall be allowed to the inhabitants, of whatever rank or nation they may be, a term of three years, reckoning from the ratification of the preſent treaty, to diſpoſe of all their properties, whether acquired or poſſeſſed by them, before or during the continuance of the preſent war; during which term of three years they ſhall have free and entire liberty to exerciſe their religion, and to enjoy their fortunes. The ſame power is granted in the countries that are hereby reſtored, to all perſons, whether inhabitants or not, who ſhall have formed any eſtabliſhments there during the time that thoſe countries were in the poſſeſſion of Great Britain.—As to the inhabitants of the countries reſtored or ceded, it is hereby agreed that no perſon ſhall, under any pretence, be proſecuted, diſturbed, or moleſted, either in perſon or property on account of his political conduct or opinion, or for his attachment to any of the contracting parties, or any account whatever, except debts contracted with individuals, or for acts ſubſequent to the preſent treaty.

XIV. All the ſequeſtrations laid on either ſide, upon funds, revenues, and credits, of what nature ſoever they may be, belonging to any of the contracting powers, or to their citizens or ſubjects, ſhall be taken off immediately after the ſignature of this definitive treaty. The deciſion of all claims among the individuals of the reſpective nations, for debts, property, effects, or rights of any nature whatſoever, which ſhould, according to received uſages and the law of nations, be produced at the epoch of the peace, ſhall be referred to the competent tribunals; in all thoſe caſes ſpeedy and compleat juſtice ſhall be done in the countries wherein thoſe claims ſhall be reſpectively preferred.

XV. The fiſheries on the coaſts of Newfoundland and of the adjacent iſlands, and in the gulf of St. Lawrence, are replaced on the ſame footing as they

were

were before the war. The French fiſhermen of Newfoundland, and the inhabitants of the iſlands of St. Pierre and Miquelon, ſhall have liberty to cut ſuch wood as may be neceſſary for them in the bays of Fortune and Deſpair, during one year, reckoning from the ratification of the preſent treaty.

XVI. To prevent all grounds of complaint and diſputes which might ariſe on account of captures which may have been made at ſea ſubſequent to the ſigning of the preliminaries, it is reciprocally agreed that the ſhips and property which may have been taken in the Channel and in the North Seas, after a ſpace of twelve days, reckoning from the exchange of the ratifications of the preliminary articles, ſhall be reſtored on the one ſide and the other; that the term ſhall be one month for the ſpace from the Channel and the North Seas as far as the Canary Iſlands incluſively, as well in the Ocean as in the Mediterranean; two months from the Canary Iſlands to the Equator; and finally, five months in all the other parts of the world, without any further exception or diſtinction of time or place.

XVII. The ambaſſadors, miniſters, and other agents of the contracting powers, ſhall enjoy reſpectively in the ſtates of the ſaid powers, the ſame rank, privileges, prerogatives, and immunities, which were enjoyed before the war by agents of the ſame claſs.

XVIII. The branch of the houſe of Naſſau, which was eſtabliſhed in the ci-devant republic of the United Provinces, now the Batavian republic, having experienced ſome loſſes, as well with reſpect to private property as by the change of conſtitution adopted in thoſe countries, an equivalent compenſation ſhall be procured for the loſſes which it ſhall be proved to have ſuſtained.

XIX. The preſent definitive treaty of peace is declared common to the Sublime Ottoman Porte, the ally of his Britannic majeſty; and the Sublime Porte ſhall be invited to tranſmit its act of acceſſion as ſoon as poſſible.

XX. It is agreed that the contracting parties, upon requiſitions made by them reſpectively, or by their miniſters or officers duly authoriſed for that purpoſe, ſhall be bound to deliver up to juſtice perſons accuſed of murder, forgery, or fraudulent bankruptcy, committed within the juriſdiction of the requiring party, provided that this ſhall only be done in caſes in which the evidence of the crime ſhall be ſuch, that the laws of the place, in which the accuſed perſon ſhall be diſcovered, would have authoriſed the detaining and bringing him to trial had the offence been committed there. The expences of the arreſt and the proſecution ſhall be defrayed by the party making the requiſition; but it is underſtood that this article has no ſort of reference to crimes of murder, forgery, or fraudulent bankruptcy committed before the concluſion of this definitive treaty.

XXI. The contracting parties promiſe to obſerve, ſincerely and faithfully, all the articles contained in the preſent treaty; and will not ſuffer any ſort of counteraction, direct or indirect, to be made to it by their citizens, or reſpective ſubjects. And the contracting parties guarantee, generally and reciprocally, all the ſtipulations of the preſent treaty.

XXII. The preſent treaty ſhall be ratified by the contracting parties within the ſpace of thirty days, or ſooner if poſſible; and the ratifications ſhall be exchanged in due form at Paris.

In teſtimony whereof we, the underſigned plenipotentiaries, have ſigned with our hands, and in virtue of our reſpective full powers, the preſent definitive treaty, cauſing it to be ſealed with our reſpective ſeals.

Done at Amiens, the 6th Germinal, in the year 10, (March 27th, 1802.)

(Signed) J. Bonaparte.
Cornwallis.
Azara.
Schimmelpenninck.

No. III. *Remarks on the Ruſſian and Spaniſh pronunciation*, &c *.

THE confuſion ſo frequently met with in books and maps, from the mode of expreſſing Ruſſian proper names, ariſes principally, if not entirely, when otherwiſe any degree of accuracy is attended to, from this circumſtance: The Germans render the third letter of the Ruſſian alphabet, *vedi*, which is preciſely the Latin or Engliſh *v* †, by their *w*, as having the ſame ſound; pronouncing *was wollen wie*, as we ſhould *vas wo'len vie*; and accordingly, on their firſt coming to England, they naturally ſay, *vat would ve* inſtead of *what would we*. Now it is well known that moſt of the maps and books concerning the geography or hiſtory of Ruſſia, uſed in France and England, are tranſlated from the German; in which the tranſlators, adhering ſtrictly to the letter of *their* original, render the words, eſpecially in our language, (for the French having no *w* may give it what ſound they pleaſe,) totally different. What a different ſound, for inſtance, in Engliſh have *Mohilew*, *Tambow*, *Tſchernigow*, *Charkow*,

* For thoſe on the Ruſſian the author is indebted to the Rev. Mr. Tooke.

† Or *f* in the word *of*, e. g. coat of arms; man of war, &c. where the *f* is neither more nor leſs than a *v*.

Charkow, *Okzakow*, *Saratow*, *Kiow*, *Wolga*, *Neeva*, *Newſki*, *Orlow*, *Daſhkow*, &c. from *Mohilef*, *Tambof*, *Chernigof*, *Kharkof*, *Otchakof*, *Saratof*, *Kief*, *Volga*, *Neva*, *Nefski*, *Orlof*, *Daſhkof*, &c. as they are ſpelt and pronounced in Ruſſian. The rev. Mr. Smirnove prefers rendering this termination by *ove*, *Tambove*, *Chernigove*, *Daſhkove*, *Orlove*, &c.; and his opinion ought to have great weight, as that of a gentleman acquainted with both languages. However the difference between us is nearly if not quite none at all; and I adopted the *of*, after the rev. Mr. Coxe, and many other reſpectable names, only for the ſake of ſimplification, and becauſe to my ear it is the better Engliſh termination of the two. At any rate the totally different German orthography ought to be for ever exploded from all Engliſh maps and writings — The Poliſh and Hungarian *c* and *z*, copied by the Germans, have likewiſe, in an inferior degree, added to the perplexities: *czar* for *tzar*, *Czernichew* for *Chernichef*, *czarowitz* for *tzarevitch*, *Petrowitz* for *Petrovitch*, &c.

The following are a few geographical terms:

Ocean—*Okeâne*.
Sea—*Morè*; *Tikoë morè*, the peaceable or Pacific ſea.
Tſchernoë morè, the black ſea.
Sredizemnie morè, the midland ſea; Mediterranean.
Lake—*Ozero*; *Bielo-ozero*, the white ſea: *Ladogſkai ozero*, the Ladoga lake.
Cape or promontory—*Noſs*, ſignifying likewiſe the noſe; as does the *Naſe* of Norway.
Strait—*Proliſe*; *Vcygatſkoi proliva*, Veigat's ſtraits.
Gulf—*Zaliſe*; Bay—*Zaliſe*; Creek—*Zaliſe*; } *Zaliva Phinſkago*, the gulf of Finland. Only one word for them all.
River—*Reka*.
Mountain—*Gora*.
Hill—*Gorka*, the diminutive of *Gora*.
Valley—*Dolina*.
Foreſt—*Leſs* (pron. *Lyeſs*.)
Deſart—*Puſtyi*.
Plain—*Dolina*: alſo *Rovnina*, and *Glade*.
Peninſula—*Poluoſtrof*.
Iſland—*Oſtrof*.
Rock—*Kamen*.
City—*Gorod*; *Novgorod*, New city; *Staragorod*, or *Bohem Stargard*, Old city.
Town—*Gorodok*, the diminutive of the foregoing.
Nation or country—*Narode*.
Native country—*Rodina*, or *Otcheſtvo*.
Region—*Strana*.
Kingdom—*Korolevſtvo*.
King—*Korol*.
Climate—*Klimatt* (evidently borrowed.)
Earth—*Zemla*, (pron. *Zeml-ya*,) *Novazemla*, New earth; like Newfoundland.
World—*Svet*, (pron. *Sv-yet*.)
Province—*Provintzia*, or *Guberniya*.
Territory; diſtrict—*Uyeſd*; *oblaſt*.
Iſthmus—*Iſtm*, alſo *pereſcheek*.
Sound—*Sund*: *Nutka-ſund*.
Volcano—*Ogneduiſchutſchaia gora*, (burning mountain.)
Whirlpool—*Puchina*.
Haven—*Gavane*.
Port— } The ſame.
Harbour— }

From Mr. Tooke's information it likewiſe appears that the common termination *ſkoy* is merely an adjective poſſeſſive or appellative; as *Finſkoy*, Finniſh; *Imperatorſkoy*, Imperial, &c.: So the Aleutſkoi, the Aleutian iſlands, &c.

A few remarks may alſo be offered on the Spaniſh pronunciation, from Dobrizhoffer and others.

Ch is pronounced as the German *tſch* (or *ch* in our *church*;) ſo *mucho*, *Chili*, are *mutſcho*, *Tſchili*.

X and *J* are ſounded gutturally like *h*; as *mujer*, *muher*; *jamas*, *hamas*; *Ximenez*, *Himenez*. In the ſound of *x* our author ſeems to err, for it is uniformly put by the Spaniſh, in expreſſing foreign words, as *ſh*; thus *Xah* is *Shah*; *Xoa* is *Shoa*; *Xerez* is *Sherez*, &c. &c. The ſound of *x* as a mere *h* ſeems a provincialiſm, or a recent affectation.

ç is preciſely equal to *z*.
Ll as *li*; thus *colmillo*, *colmilio*.
ñ as *gn* in French; *Eſpaña*; *Eſpannia*.
qu as *k*.

Link, and his ingenious tranſlator, preſent ſome remarks on the Portugueſe pronunciation. The Portugueſe do not uſe the *i* after *t*, &c. as *tierra*, *terra*. The *ch* is pronounced as in French; and both the *j* and the *x* like the French *j*. The final *aõ* is ſounded *aung*; and the final *m*, which is frequent, like *ng*. The *n* between two vowels is changed to *nh*; thus *vino* becomes *vinho*, pronounced *veenyo*. The Portugueſe is averſe to the *l*; hence the articles *lo*, *la*, become ſimply *o*, *a*, this *o* being pronounced as *u*.

No. IV. *Value of Coins uſed in common Calculations.*

	French Money. Frs.	Cents.	*Sterling.* £.	s.	d.
A Florin of Germany, -	1	20	0	1	10
——— Auſtria, -	2	65	0	2	2
Rix Dollar of Pruſſia -	4	—	0	3	4
Dollar of N. America,	5	40	0	4	6
Guinea of England, -	25	—	1	1	0
Rix Dollar of Denmark,	5	70	0	4	9
Piaſtre of Spain, -	5	30	0	4	5
Florin of Holland, -	1	20	0	1	10
Lire of Italy, - -	—	85	0	0	8½
Scudi of Rome, -	5	53	0	4	7

	French Money. Frs.	Cents.	*Sterling.* £.	s.	d.
A Ducat of Naples *, -	4	30	0	3	7
Rouble of Ruſſia, -	4	5	0	3	4½
Rix Dollar of Sweden,	5	80	0	4	10

The common large tables of coins are not only uſeleſsly prolix, by including thoſe never mentioned in books of hiſtory or travels, but preſent many antiquated names and values, and are in other reſpects often groſsly erroneous.

* A German ducat is about 9s. 4d.; the dollar 4s. 8d.

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